RAILROAD GAZETTE

FRIDAY, JANUARY 4.

Train Accidents in November.

The following accidents are included in our record for the month of November :

COLLISIONS.

On the night of the 1st a freight train on the Michigan Central road ran into some cars standing on the main track in Ypsilanti, Mich. The engine and several cars were wrecked, the engineer and fireman hurt.

On the afternoon of the 2d several cars broke loose from a freight train on the Texas & Pacific road, and ran down grade and into a freight train standing at Pilot Point, Tex. Five cars were damaged.

On the night of the 3d a freight train on the New York, Lake Erie & Western road ran into another freight at Olean, N. Y., damaging three cars.

Very early on the morning of the 4th a freight train on the Chicago & Grand Trunk road ran into some cars which had broken loose from a preceding freight near Flint, Mich. The engine and several cars were damaged, the wreck caught fire and five cars were destroyed.

On the night of the 8th a freight train on the Chicago, Burlington & Quincy road ran into some cars which had broken loose from a preceding freight near Russell, Ia., wrecking the engine and several cars.

On the morning of the 7th a freight train on the New York Central & Hudson River road ran into another freight in East Rochester, N. Y., damaging several cars.

On the evening of the 7th a passenger train on the Chicago, Rock Island & Pacific road struck a misplaced switch and was thrown upon a side track of the Michigan Central at Forty-fourth street in Chicago. The train ran into some freight cars on the side track, wrecking a number of them, and wrecking the engine and baggage car and partially tearing the roof from the mail car of the express. Two trainmen were fatally hurt and two others less severely injured.

On the night of the 7th a Baltimore & Ohio passenger train ran over a misplaced switch and into a Pittsburgh, Cincinnati & St. Louis freight train standing on a siding at Rockport, O., on the track used by both roads. Both engines and several cars were piled up in a very bad wreck, killing two trainmen and injuring three others.

On the afternoon of the 10th a freight train on the Troy & Greenfield road, bound west, took the east-bound track at Zoar, Mass., and stopped to let a passenger train, bound west, pass it. While standing at Zoar the engine was struck by a construction train, which rushed into the depot on the same track, bound east, and came in collision with the freight train with terrible force. The engine was lifted from the track and fell on the other engine. Several cars were piled promiscuously against the engine. One brakeman on the construction train jumped and was seriously injured.

On the evening of the 10th a local passenger train on the Boston & Maine road ran into another passenger train in Somerville, Mass., doing some damage and injuring an engineer.

On the night of the 10th a passenger train on the West Jersey road ran over a misplaced switch and into an engine standing on a siding in Salem, N. J. Both engines were damaged.

On the morning of the 12th a wild engine on the New York Central & Hudson River road ran into the rear of a freight at Fultonville, N. Y., doing some damage and killing a boy who was riding on the engine.

On the afternoon of the 12th a freight train on the New York Central & Hudson River road ran into a preceding freight near Utica, N. Y., wrecking several cars. An oil car caught fire and was destroyed.

On the evening of the 13th a freight train on the New York & New England road ran into some cars which had broken loose from a preceding freight near Newington, Conn. An engine was damaged and three cars wrecked.

On the morning of the 14th a freight train on the Oregon Railway & Navigation road ran into another freight which was coming out of a siding at Cummings, Or., doing considerable damage. There were no signals out, although the second train was expected.

On the morning of the 15th a passenger train on the Houston & Texas Central road ran into the rear of a construction train which was going into a siding at Howe, Tex. The engine upset, killing the fireman, and another trainman was hurt.

About noon on the 16th a freight train on the Chicago, Burlington & Quincy road stalled on a grade near Streator, Ill., making it necessary to flag and stop a following passenger train. Another freight was following the passenger train so closely that a signal sent back was too late to stop it, and it ran into the passenger train, crashing completely through the rear car and filling it with escaping steam. Six passengers and a trainman were killed or fatally hurt, a trainman and four passengers less severely injured, all of them being more or less scalded.

On the morning of the 17th a freight train on the Chicago, Burlington & Quincy road broke in two near Lombardville, Ill., and the rear section ran into the forward one, damaging several cars.

On the morning of the 19th a freight train on the International & Great Northern road ran into the rear of a passenger train which had stopped at Elkhart, Tex., damaging the sleeping car.

On the morning of the 19th a passenger train on the Burlington, Cedar Rapids & Northern road struck a freight car which had been run on a siding in Burlington, Ia., but left projecting over on the main track. The engine and one car were damaged.

On the morning of the 21st a construction train engine on the Connecticut River road ran into the rear of a freight train which had stopped in Greenfield, Mass. The caboose was damaged, the conductor and two laborers hurt. There was a dense fog at the time.

On the morning of the 21st a freight train on the Pennsylvania Railroad ran into another freight in the yard at Columbia, Pa. A caboose and two cars of one train were demolished and the engine and six cars of the other were thrown from the track and badly dismantled. A brakeman was sleeping in the caboose at the time and was fatally injured.

Very early on the morning of the 22d a passenger train on the Alabama Great Southern road ran into the rear of a freight train which was going into a siding at Coaling, Ala. An engine and several cars were wrecked, and a sleeping car porter badly hurt.

On the morning of the 22d a freight train on the Pennsylvania Railroad was run into by a passenger train at Monmouth Junction, N. J. Five cars were thrown from the track, an engine was damaged and the engineer was scalded.

On the afternoon of the 22d a freight train on the Oregon Railway & Navigation Co. road ran into some cars which had been left on the main track in the yard at Albins, Oregon. An engine and several cars were damaged.

On the night of the 22d a freight train on the New York, New Haven & Hartford road broke in two near Southport, Conn., and the rear section afterward ran into the forward one, damging eight cars.

On the night of the 22d a coal train on the Central Rail road of New Jersey ran into a preceding coal train near Green Brook, N. J., wrecking 12 cars.

On the evening of the 23d a freight train on the Missouri, Kansas & Texas road ran into some cars which had broken loose from a preceding freight near Big Cabin, Ind. Ter., making a bad wreck, and injuring five trainmen.

On the morning of the 24th a passenger train on the New York, West Shore & Buffalo road ran into the rear of a freight train which was just going into a siding at Tappan, N.Y. The passenger, engine and six freight cars were badly broken.

On the morning of the 24th a wild engine on the New York, West Shore & Buffalo road ran into the rear of a wrecking train running with the rear of the train near New Durham, N. J. Both engines were damaged, two trainmen killed and five others hurt. There was a dense fog at the time.

Early on the morning of the 25th a freight train on the Wabash, St. Louis & Pacific road ran into a car which had been blown from a siding upon the main track at Sciota, Ill. The engine and several cars were badly broken, killing a brakeman and injuring the engineer and the fireman.

On the morning of the 26th a freight train on the New York, Chicago & St. Louis road ran into some cars which had been blown from a siding out upon the main track at Silver Creek, N. Y. The engine and 27 cars were piled up in a bad wreck, blocking the road all day. The engineer was hurt.

On the evening of the 26th a freight train on the Wabash, St. Louis & Pacific road ran into a freight car which had been blown from a siding upon the main track in Peoria, Ill. The engine and five cars were wrecked, a brakeman killed, the engineer and fireman hurt.

On the morning of the 28th a freight train on the New York, Pennsylvania & Ohio ran into a preceding freight which had been stopped near Windsor, O., by the breaking in two of another still preceding train. Several cars were wrecked and the conductor killed, and the wreck caught fire, destroying nine cars. The stopped freight, it is said, sent back no signal.

On the morning of the 29th a flat car broke loose from a freight train on the Northern Pacific road at Jefferson City, Mont., and ran back down grade a mile and a half and into a freight train which had stopped to take on water. Several cars were wrecked and two trainmen hurt.

BUTTING.

On the morning of the 1st there was a butting collision between two freight trains on the Lehigh & Hudson River road near Warwick, N. Y., doing a little damage.

On the morning of the 3d there was a butting collision between a construction and a passenger train on the Union tracks in Indianapolis, Ind. Two laborers were hurt.

On the evening of the 4th there was a butting collision between two freight trains on the Canada Southern road near Springfield, Ont., caused by a mistake in reading orders. Both engines and several cars were wrecked and a brakeman hurt.

Very early on the morning of the 8th there was a butting collision between two freight trains on the Kansas City, St. Joseph & Council Bluffs road near St. Joseph, Mo. Both engines and six cars were badly broken.

On the evening of the 9th there was a butting collision between a passenger train and a wild engine on the Chicago & Northwestern road near Union, Ill, by which both engines were badly broken, an engineer and a fireman hurt.

On the afternoon of the 14th there was a buttiug collision between two freight trains on the Chesapeake & Ohio road near Kanawha, W. Va., by which both engines and several cars were damaged.

On the morning of the 17th there was a butting collision between two passenger trains on the Illinois Central road near Bradford, Tenn., in a 16 ft. cut on a curve. Both engines were thrown from the track, and stood almost on end. The baggage cars of each train were telescoped, and the adjoining passenger coaches subsequently caught fire. Both passenger and baggage cars were burned. The baggage, mail and express matter was badly scattered, but not lost. Two trainmen were killed, six trainmen and nine passengers hurt.

On the afternoon of the 19th there was a butting collision between two freight trains on the New York, Pennsylvania & Ohio road near Ravenna, O., by which both engines and three cars were damaged.

On the afternoon of the 20th there was a butting collision between a passenger train and a yard engine on the St. Paul, Minneapolis & Manitoba road in Minneapolis, Minn. Both engines were damaged.

Near midnight on the 20th there was a butting collision between two freight trains on the New York, Pennsylvania & Ohio road near Amasa Crossing, Pa. Both engines and a number of cars were wrecked, and one engineer was slightly hurt. One of the trains was running without orders.

On the morning of the 24th there was a butting collision between two freight trains on the Scioto Valley road near Ashville, O., in which both engines and several cars were wrecked, a trainman killed and three others hurt. One of the trains was running without orders.

On the evening of the 25th there was a butting collision between two freight trains on the Indianapolis & St. Louis road near Mattoon, Ill., caused by a misunderstanding of orders. Both engines and several cars were damaged.

CROSSING.

On the night of the 2d an Ohio & Mississippi freight train ran into a Vandalia Line freight at the crossing in East St. Louis, Ill., doing some damage.

On the evening of the 29th a Missouri Pacific yard engine ran into the engine of a St. Louis Bridge freight train at a crossing in the yards in East St. Louis, Ill. The bridge engine was badly broken and the fireman seriously scalded.

PASSING.

On the night of the 15th as a West-bound passenger train on the New York, Lake Erie and Western road was passing an east-bound freight on the opposite track near Rutherford, N. J., a door of a refrigerator car became loose and swinging open came in contact with one of the palace coaches. The forward end of the coach at the water closet was stove in, the door leading to the closet being shattered.

DERAILMENTS.

BROKEN RAIL.

On the night of the 4th a freight train on the Vandalia Line was thrown from the track near Vandalia, Ill., by a broken rail.

On the evening of the 16th a passenger train on the Charlotte, Columbia & Augusta road struck a broken rail near Columbia, S. C., and one car was thrown from the track.

On the evening of the 27th a passenger train on the Chicago & Grand Trunk road struck a broken rail near Eldon, Ill., and the engine and two cars were thrown from the track and badly broken, killing a brakeman and injuring the conductor and baggageman.

On the morning of the 28th several cars of a passenger train on the Houston & Texas Central road were thrown from the track by a broken rail on the high trestle bridge at Trinity River, Tex. The cars remained on the bridge, so that it was exceedingly difficult to get at them, and the road was blocked 13 hours.

BROKEN BRIDGE.

On the morning of the 1st a freight train on the Chesapeake, Ohio & Southwestern road broke through a trestle bridge near Muldraugh's Hill, Ky., and two cars went down. The bridge was on fire at the time, but the train was too near to be stopped when the fire was discovered. The engine and most of the train passed over safely.

On the morning of the 3d a freight train on the Canadian Pacific road broke through a trestle bridge at Hawk Lake, Manitoba, and all the cars were wrecked.

On the evening of the 8th a freight train on the East Tennessee, Virginia & Georgia road broke through a trestle bridge near Calera, Ala., and two cars were wrecked.

On the morning of the 17th a freight train on the Wabash, St. Louis & Pacific road broke through a bridge near Cresswell, Ill., and several cars were wrecked, killing a brakeman, injuring another brakeman and the conductor.

SPREADING OF RAILS.

On the night of the 15th a passenger train on the Alabama Great Southern road was thrown from the track near Collinsville, Ala., by the spreading of the rails, and four cars went down a bank and were damaged, injuring the conductor and three passengers, besides a number slightly bruised.

On the night of the 19th fourteen cars of a freight train on the Texas and Pacific road, were thrown from the track, near Alamo Mills, Tex., by the spreading of the rails.

On the afternoon of the 20th a passenger train on the St. Martin & Upham road was thrown from the track near Hampton, N. B., by the spreading of the rails, and two cars rolled down a high bank, injuring 16 passengers slightly.

On the morning of the 24th a passenger train on the Texas & St. Louis road was thrown from the track near Mt. Pleasant, Tex., by the spreading of the rails. Two cars went down a bank, injuring two passengers seriously and twelve slightly. Trackmen had been laying some new rails and had not fastened them properly.

BROKEN WHEEL.

On the morning of the 8th the rear car of a passenger train on the Chicago, Rock Island & Pacific road was thrown from the track near Jamesport, Mo., by a broken wheel and rolled over down an embankment. The car was badly broken, one passenger killed and 12 others hurt.

On the evening of the 13th several cars of a freight train on the Connecticut & Passumpsic Rivers road were thrown from the track near St. Johnsbury, Vt., by a broken wheel.

On the evening of the 14th a freight train on the New York & New England road ran off the track at the New York, New Haven & Hartford crossing in Hartford, Conn., and four cars were piled up together. It is thought that the accident was caused by a broken wheel.

On the morning of the 17th the engine and one car of a passenger train on the Ohio Central road were thrown from the track near Bucyrus, O., by the breaking of a wheel under the engine truck. The engineer was hurt.

On the morning of the 21st a car of a passenger train on the Louisville & Nashville road was thrown from the track near New Castle, Ala., by a broken wheel.

On the morning of the 29th several cars of a freight train on the Wabash, St. Louis & Pacific road were thrown from the track near Kirksville, Mo., by a broken wheel.

BROKEN AXLE.

On the afternoon of the 8th the engine of a passenger train, which was running backwards on the Boston, Hoosac Tunnel & Western road near Mechanicsville, N. Y., was thrown from the track by the breaking of an axle under the tender. The engine was wrecked, the engineer badly and the fireman fatally hurt. The train was a special, carrying officers of the road on an inspection trip.

On the morning of the 13th three cars of a construction train on the New York, West Shore & Buffalo road were thrown from the track near Savannah, N. Y., by a broken axle, and went down a high bank, injuring 30 laborers.

On the afternoon of the 17th three cars of a freight train on the Wilmington & Northern road were thrown from the track near Wilmington, Del, by a broken axle, and went down a high bank. The cars were loaded with gunpowder.

On the afternoon of the 24th a car of a freight train on the Wilmington & Northern road was thrown from the track near Mortonville, Pa., by a broken axle, and upset. The car was loaded with beer, and the whole neighborhood came to help clear the track

BROKEN TRUCK.

On the afternoon of the 28th the rear car of a passenger train on the Boston, Barre & Gardner road jumped the track at a sharp curve near North Worcester, Mass. The car broke loose from the train and went down a high bank, rolling over twice on its way. The car was badly damaged, one passenger fatally injured and 37 others less severely hurt. The Massachusetts Commission, in its investigation of the accident, attributed it to a slight breakage of the truck, which prevented it from curving properly.

ACCIDENTAL OBSTRUCTION.

On the morning of the 2d nine cars of a freight train on the New York, Lake Erie & Western road were thrown from the track near Southfield, N. Y., by a brake beam which fell on the track.

On the morning of the 9th a freight train on the West Jersey road struck a wagon at a street crossing in Camden, N. J., and several cars were thrown from the track and a brakeman hurt.

On the evening of the 14th a freight train on the Terra Haute & Indianapolis road struck a tree which had been blown down across the track near Colfax, Ind. The engine was thrown from the track, killing the engineer.

Very early on the morning of the 21st a passenger train on the St. Louis Coal road ran into a large tree which had been blown down across the track near Murphysboro, Ill., and was thrown from the track.

On the evening of the 21st a freight train on the Jersey Shore, Pine Creek & Buffalo road struck a stone which had fallen on the track near Waterville, Pa. The engine was wrecked, the engineer and fireman hurt.

On the afternoon of the 28th, the engine and four cars of a construction train on the Columbia & Puget Sound road were thrown from the track near Black River, Wash. Ter., by a large stone which had fallen on the track.

Very early on the morning of the 30th a car of a circus train on the Pittsburgh, Cincinnati & St. Louis road caught fire when near Spring Valley, O., and a timber from the burning car fell on the track, throwing off several cars

loaded with wild animals, which were piled up together in a bad wreck.

CATTLE.

On the night of the 1st a freight train on the Texas Pacific road ran over a steer near Cisco, Tex., and was thrown from the track. Two brakemen were hurt.

On the morning of the 10th a passenger train on the Boston & Lowell road ran over a cow near Salem, Mass., and was thrown from the track. The engine upset, injuring the engineer.

On the morning of the 19th a freight train on the Houston & Texas Central road ran over a horse near Austin, Tex., demolishing two cars, and slightly wounding a brakeman.

WASH-OUTS AND LAND-SLIDES.

Early on the morning of the 20th a freight train on the St. Louis, Iron Mountain & Southern road ran into a wash-out near Piedmont, Mo., and the engine and several cars went down into the gap.

On the morning of the 21st a freight train on the Chesapeake & Ohio road ran into a land-slide near White Sulphur Springs, Va., and the engine and several cars were thrown from the track.

On the evening of the 22d a freight train on the Kansas City, Springfield & Memphis road ran into a wash-out near Mammoth Springs, Mo., and the engine and 13 cars were wrecked.

On the evening of the 26th a freight train on the Chicago & Alton road ran into a wash-out near Mexico, Mo., and 10 cars were wrecked. A brakeman was badly hurt.

MISPLACED SWITCH.

On the evening of the 4th the engine and six cars of a freight train on the Belt road were thrown from the track in Indianapolis, Ind., by a misplaced switch.

On the morning of the 6th several cars of a freight train on the Chesapeake & Ohio road were thrown from the track at Aden, Ky., by a misplaced switch. A brakeman was killed.

On the evening of the 8th the engine of a passenger train on the Hartford & Connecticut Valley road was thrown from the track at Deep Hollow, Conn., by a misplaced switch.

On the evening of the 13th the engine and two cars of a freight train on the New York, Pennsylvania & Ohio road were thrown from the track in Meadville, Pa., by a misplaced switch.

On the afternoon of the 18th a passenger train on the International & Great Northern road was thrown from the track in Tyler, Tex., by a misplaced switch.

On the afternoon of the 28th the engine of a passenger train on the Indiana, Bloomington & Western road was thrown from the track in Decatur, Ill., by a misplaced switch.

On the afternoon of the 30th, the engine and two cars of a passenger train on the Chicago, Burlington & Quincy road were thrown from the track in Lincoln, Neb., by a misplaced switch.

MISCELLANEOUS.

On the morning of the 4th, at Easton, Pa., while workmen were engaged in repairing the Lehigh Valley bridge over the Delaware River, the fast freight came along, and before it could be stopped, ran along the track to the spot where the repairs were being made. The rails had been removed and heavy wooden timbers spanned the 10 or more feet between the pier and the end of an iron span. Some of these timbers had been removed, and the locomotive crashed through the remaining ones and lodged against the pier, turning half over. The rear driving wheel caught against the heavy girder of the span, and there the engine hung. To remove it was no easy task. All day long a force of men were working over the wreck, but so peculiar was the accident and so difficult the task of getting a purchase on the locomotive that it required considerable time to remove it. The engine weighed over 70 tons, and as the bridge is over 70 feet high at the point in question, the magnitude of the work may be imagined. The bridge span was also injured and the damage was heavy. The accident was occasioned by the engineer of the train being unable to stop after getting the signal, as a pushing engine on the rear of the train, which extended around a curve, could not be notified, and pushed the front of the train upon the railless span.

On the afternoon of the 12th a car of a passenger train on the Worcester & Shrewsbury road was blown from the track near Worcester, Mass., and upset.

MALICIOUS.

Very early on the morning of the 1st a passenger train on the Humeston & Shenandoah road was thrown from the track at the bridge over West Tarkio River, near Shenandoah, Ia., where a rail had been removed, evidently for the purpose of wrecking the train. The engine and two cars went over the bridge and down a steep bank and were badly wrecked. The engineer was killed, the fireman, express messenger and a passenger hurt.

On the morning of the 5th a passenger train on the Missisquoi road was thrown from the track near North Enosburg, Vt., by a switch which is believed to have been purposely misplaced. The engine went down a high bank into the Missisquoi River and was wrecked, killing the fireman and injuring the engineer badly.

On the morning of the 6th the engine of a passenger train on the Texas & New Orleans road was thrown from the track near Houston, Tex., by a rail laid across the track. The engineer was badly scalded.

On the night of the 10th the engine of a freight train on the Northern Central road was thrown from the track near York Haven, Pa., by a rail laid across the track.

On the 11th the engine of a passenger train on the Galveston, Harrisburg & San Antonio road was thrown from the track near Columbus, Tex., where a rail had been removed by parties unknown. The engineer was hurt.

On the night of the 15th a passenger train on the Houston & Texas Central road was thrown from the track near Choctaw, Tex., by obstructions said to have been put on the track by convict laborers. A passenger was killed, three trainmen and 24 passengers hurt.

On the night of the 23d the engine of a passenger train on the Norfolk & Western road was thrown from the track near Bristol, Tenn., by a switch which had been purposely misplaced.

On the afternoon of the 25th as a passenger train on the Atchison, Topeka & Santa Fe road was near Socorro, N. M., it was stopped by seven cowboys, who opened fire on the train. About 20 shots were fired, and the engineer was killed. The robbers removed a fish-plate and spread the rails, throwing the engine, mail car, one coach and the front end of a sleeping car from the track. A brakeman who escaped brought in the first account. The robbers hung around the wreck until night and then left, taking about $700 from the express car. The robbers have since been captured.

On the night of the 27th the engine and 15 cars of a freight train on the Pittsburgh, Cincinnati & St. Louis road were thrown from the track at Bowerstown, O., by a switch which is believed to have been purposely misplaced.

UNEXPLAINED.

On the morning of the 1st several cars of a freight train on the Louisville & Nashville road ran off the track in Belleville, Ill., and two cars were wrecked.

On the evening of the 8th the sleeping car of a passenger train on the St. Paul, Minneapolis & Manitoba road ran off the track in Moorhead, Minn., and upset down a bank, injuring 12 passengers slightly.

On the evening of the 4th a car of a freight train on the Chicago, Burlington & Quincy road ran off the track near Naperville, Ill., delaying trains some time.

On the evening of the 12th the engine and one car of a passenger train on the Baltimore & Ohio road ran off the track near South Chicago, Ill., and the engineer was hurt.

On the morning of the 15th the engine of a passenger train on the Toledo, Cincinnati & St. Louis road jumped the track near Lebanon, O., went down a high bank and was wrecked, injuring the engineer.

On the afternoon of the 15th the engine and three cars of a coal train on the Providence & Worcester road ran off the track near Woonsocket, R. I., blocking the road three hours.

On the night of the 15th several cars of a freight train on the Louisville & Nashville road ran off the track near Brooks, Ky., blocking the road seven hours.

On the morning of the 20th a freight train on the Cincinnati & Eastern road jumped the track near Batavia, O., and two cars of lumber went over a trestle bridge.

On the night of the 20th a freight train on the Mobile & Ohio road ran off the track near Jackson, Tenn., damaging several cars and killing a brakeman.

On the afternoon of the 22d the engine of a freight train on the Missouri Pacific road jumped the track in Poplar street, in St. Louis, and ran diagonally across the street and into a small house, demolishing the front of it completely.

On the night of the 22d a freight train on the Wabash, St. Louis, & Pacific road ran off two track near Moberly, Mo., blocking the road four hours.

On the afternoon of the 23d the engine of a freight train on the New York Central & Hudson River road jumped the track near Byron, N. Y., blocking two tracks nearly three hours.

On the afternoon of the 24th several cars of a passenger train on the Texas & Pacific road ran off the track near Marshall, Tex., blocking the road several hours.

On the morning of the 25th several cars of a passenger train on the Michigan Central road ran off the track near Lake, Ind. A passenger was hurt.

On the morning of the 30th a car of a passenger train on the Manhattan Elevated road jumped the track near the Chatham Square station in New York. The car broke the ties, but was kept from falling to the street below by the guard rail.

OTHER ACCIDENTS.

MISCELLANEOUS.

On the evening of the 3d a car in a freight train on the Mobile & Girard road caught fire when near Union Springs, Ala., and was destroyed.

On the morning of the 27th the engine of a freight train on the New York, Lake Erie & Western road broke a coupling rod when near Elmira, N. Y., doing some damage to the engine.

SUMMARY.

This is a total of 122 accidents, in which 34 persons were killed and 235 injured; a decrease of three accidents and of two in the number killed, but an increase of 106 injured, as compared with November, 1882.

The number of accidents has been exceeded in six months of the year and the number of killed in seven months, but the number of injured is the largest reported for any month of the year.

The eleven months of the year to the end of October show a total of 1,528 accidents, 441 killed and 1,800 injured, being a monthly average of 139 accidents, 40 killed and 164 injured. November was below the average, except in the number injured.

Contributions.

An American Engineer's Observations of European Railroad Practice.

DRESDEN, Saxony, Nov. 27, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

During a recent stay in England a number of points in English railway practice struck me as being of interest to American railroad men, either as worthy of trial or to be avoided; or historically interesting, as accounting for the difference between our own and the English practice.

One is struck at once by the massive and finished character of English railway construction, some of which is desirable and paying in the long run—such as the covering of slopes with grass and the large bearing surface given to the rails on the ties.

The former would in many cases pay for itself with us in a few years. Most engineers can recall numerous places where if the slopes of cuts had been covered by a light top dressing of good soil, readily found, and generally wasted in construction at the opening of cuts by mixing it indiscriminately with other materials in the banks, and if grass seed had been sown upon them, hundreds of days' labor in every year in single cuts would have been saved.

Again, in the matter of rail bearing, one great argument against the use of soft wood, creosoted or otherwise preserved, for ties has been that they would be destroyed by cutting down of the rail into them, long before the effect of the preserving material was exhausted.

The English use, so far as my observation goes, nothing but sawed soft-wood ties, but they give 120 square inches or more bearing surface of the rails on each tie by means of the wide based chair in which the rail is supported, or 40 square inches per linear foot of track, while our best lines seldom average more than 65 square inches per tie, or 36 square inches per linear foot of track. It is to be noted in this connection that while the English and European roads generally use heavier rails than ours, they do not get any better support for the loads than is usual with us, since the ties are spaced 3 ft. or more between centers.

It seems to me, therefore, questionable whether in the development of our present rail sections too much regard has not been had to the strength and durability of the rail and too little to the effect of the traffic on the ties beneath. While much thought, observation and calculation has been bestowed on the former it has been common, in my observation, to make the width of base equal to the height of the rail. This may be correct so far as the ratio of increase of base is concerned, namely, directly as the height, though even this appears open to doubt, but seems to me of questionable correctness as to the absolute proportion of base to height.

There is, however, on English railways a great deal of massiveness which merely acts as a dead load on the paying ability of the lines, partly inflicted upon them by the original opposition to their construction, in such forms as show-arches in stone, where they were not allowed to change in the least degree the direction of a road or stream at a time when the use of iron bridges was in its infancy, and partly the result of bad economics in the design and laying-out of roads.

A conspicuous instance of the latter, which came under my frequent observation, is the use of a stone viaduct 130 ft. high at the centre, with 30 arches of 50 ft. span, immediately followed by a tunnel half a mile long on a little branch line projected by the notorious George Hudson in the days of the early English railway excitement, where a detour of two to three miles would have avoided anything more than ordinary works.

I do not think there is such close study of the constructions which are economical for particular purposes as with us. Although the round or polygonal engine-house is the usual form, I have seen several—recently built—of that most inconvenient and unprofitable form, the rectangular, with the turn-table under cover in the centre of the house.

For the English climate, rectangular houses with longitudinal transfer tables would seem a very economical form, but of these I have not happened to see a single instance.

It is also usual to build freight houses with not only the tracks but also the wagon roadway running through them, involving heavy expense in the matter of roofs in proportion to the accommodation afforded.

I had, through the politeness of the Engineer of a prominent road, an opportunity of going "special" over a piece of the line, with a fine swing bridge as an objective point.

The swing span is operated by hydraulic power as follows: The whole span, weighing 800 tons, was first raised bodily about $\frac{1}{16}$ inch; wedges were then withdrawn from under the ends; after which knuckle-joints, on which the bridge rests in connection with the latches, were dropped, and the bridge was swung—the whole being operated from a glass observatory over the centre of the span; in which tell-tales show the position of the wedges and latches, so that the operator may see that they are working satisfactorily.

After seeing the process outside, we went below into the drum of the draw, where were the hydraulic engines (in duplicate) by which the bridge is swung, and the boiler and steam engine for filling up the accumulator in the central pier, by which the hydraulic engines are worked. The whole hydraulic machinery was of Sir Wm. Armstrong's manufacture, and was of fine, substantial design and workmanship; and the whole chamber was lit by a row of gas-lights around the central pier with a lavish use of gas which is usual on English railways, and which is partly due to its remarkable cheapness in England.

The bridge was swung again while we were below, and the steam engine went into action automatically, as soon as water began to be drawn from the accumulator. To my surprise, it stopped before we left the chamber, and I asked the Superintendent whether it did not usually take longer to fill up the accumulator. He said, with some pride in his machinery, that it usually took not more than twice as long to fill up the accumulator as the hydraulic engines were at work, which prompted me to ask the engineer of the railway, who brought me, whether it would not seem more profitable to slightly increase the steam engine power and discard the hydraulic machinery; and he admitted that it did *look* so.

When it is further noted that the knuckle-joints under the ends of the bridge are such as have been used alone for the last 16 years for supporting the ends of the Burlington and Quincy bridges over the Mississippi, with entire satisfaction, it seemed as if the lifting of the whole 800 tons each time the bridge was swung might also have been dispensed with.

A serious element of the cost of promoting an English public enterprise is the legal expenses in getting a bill through Parliament. The figures in the case of some of the earlier English railways were much increased, no doubt, by the furious opposition made to them, but that these expenses are not yet reduced to a reasonable level is shown by the fact that the Chairman of the new Manchester Ship Canal scheme announced to his stockholders last summer that the expenses in the last Parliamentary session for promoting their bill, which had *failed*, were £60,000, but that he hoped to get the bill through in the next session by a further expenditure of £25,000!!

It is hard to see what so much money can be used for legitimately in such an affair, unless lawyers' fees are so high as to make the law an extraordinarily attractive profession.

One reason for it may, perhaps, be found in the singular complexity of the English legal practice, which obliges a client to have a different man to plead his case from the man who works it up; and whose etiquette makes it obligatory for the pleader (barrister) to get his information at second hand, from the attorney or solicitor, instead of directly from the client.

There is much used, both in England and on the continent, a form of cross-over for a number of yard tracks where yard space and time in switching are of importance, which has obtained very little with us; but in spite of its expense would probably pay well in many cases on account of the above-mentioned savings.

This consists of a diagonal track crossing the parallel

system by frog crossings at such an angle as to admit of switches into each track crossed, as shown by the diagram.

The saving in wear and tear of plant and of liability to derailment is also not unimportant, since, in using such a cross-over so many fewer reverses are made, and in crossing one or more intermediate tracks to reach more distant ones the switch rails in these tracks are not run over, as they are in our usual arrangement.

High platforms level with the car floor, or nearly so, are still universal in England. The only excuse that can be made for them is the difficulty of getting to the tracks from them, and the consequent ease of keeping the same clear for trains.

Glass roofs over the platforms are very general, and are agreeable in the mild and somewhat sombre English climate, but would be unendurable with us in hot weather.

The English bridge-floor, where I have observed it, is made by covering the bridge (when a "deck") with plank or sheet iron, and carrying the ballast across it—a most extraordinary, not to say dangerous, practice in view of the uncertainity as to what the condition of the ballast support is under such circumstances, and also of the extra load imposed on the bridge and of the difficulty of inspecting it.

The method of changing rails is different from ours, and is made practicable by the large spaces between the ties When rails are to be changed out new ties are inserted throughout between the old ones, and about 8 in. out of centre from the existing track; the new rails are then put down on these in complete order, and when all is ready the new section is connected with the old track at each end by a slight swing; the old track is then removed and the new one lined up.

The Midland Railway is now using a large proportion of passenger stock with English bodies—of one third greater length, however—and with American running gear; and the company is so much pleased with this stock, in spite of its greater dead weight per passenger, that they have made it their standard, expecting to use considerable four and six-wheel passenger stock, however, in various special services. This company, and perhaps others, in applying brakes, places them on both sides of the same wheel—a practice which, while adding considerably to the dead weight, probably gives less vibration and jar and saves some wear and tear of axle boxes.

The continuous brake—generally air or vacuum of the Westinghouse forms—is now nearly universally used in England on passenger stock, but the varieties in use on different roads in the same through lines have caused them to make the singular compromise, in some cases, of leaving them off through vehicles.

I do not remember to have seen in Mr. Worthington's letters on English freight facilities any mention of the practice in some places (I observed it at Hull) of coaling steamers by picking up the car of coal with a powerful crane and swinging it bodily over the steamer's hatch.

The method seems a good one in such cases, as taking less space than any coal-pocket system.

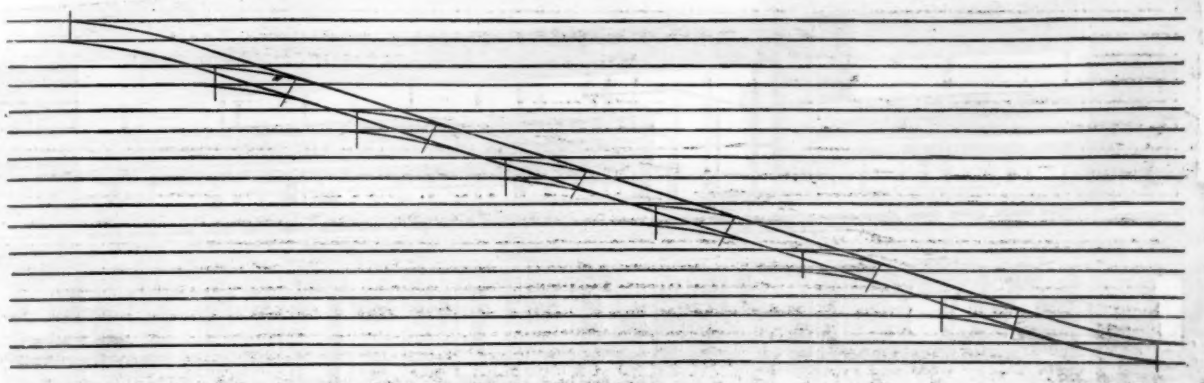
A neat application of water as a counterbalance for inclined railways and vertical hoists deserves mention, which I have not seen given it. This, as used at Scarborough in a passenger railway up the cliff, and in a coal and iron hoist at the John Brown blast furnaces at Sheffield, consists simply of discharging the water from a main into a tank on the bottom of the car at the top of the lift until it overbalances the heavy car at the bottom.

There is a curious exception in England to the usual paternal care exercised over the individual in the matter of farm crossings where gates are used. These are opened at the discretion of the farmer without displaying a signal, the only check on their use being a fine of 40 shillings for leaving one open.

We are apt to think of the average Briton as being a little slow in his mental processes, but I think the average American railroad man must always feel his brain reel, as mine did, on a first visit to a large English signal cabin, with the mere effort of keeping track of the different motions of the signal man, who has sometimes as many as 100 levers to operate in conjunction with answering the signals on four to eight signal bells.

It is true he cannot make a mistake, since everything must be done in the safe order or not at all; but it is of course necessary to do everything without error, to avoid delay; and it is wonderful to see the promptitude and certainty with which one of these men plays on the great key-board, mingling his playing with signals to other stations and answers to the same, and occasional hand signals to switching engines, which are moving about subject to his approval, while the main semaphore signals remain at danger.

W. HOWARD WHITE.



ENGLISH YARD CROSS-OVER.

The Dimensions of the Niagara Cantilever Bridge.

The following statement of the dimensions of this bridge has been prepared by its Chief Engineer, Mr. C. C. Schneider:

The general dimensions are as follows: Length of bridge proper, from centre to centre of end of pins, 910 ft. 1⅝ in.; divided into two cantilevers of 395 ft. 2.5 in. each, and one intermediate span of 119 ft. 9 in. The towers are braced wrought-iron structures, 130 ft. 6¼ in. high, resting upon masonry piers 39 ft. high; the foundations under the towers are of beton, 8 ft. thick, directly on the rock, forming a uniform, solid and enduring mass.

The trusses are two in number, 28 ft. apart between centres; the panels are 25 ft. long, excepting those of the intermediate span, which are 24 ft., and the end panels of the shore arms of the cantilevers, which are 20 ft. 2.5 in. long. The depth of the cantilever trusses, over the towers, is 56 ft.; and at the ends, 21 ft. for shore ends, and 26 ft. at the river ends.

The structure has been proportioned to carry, in addition to its own weight, a freight train on each track at the same time, weighing one ton per lineal foot, with each train headed by two 76-ton consolidation engines. The factor of safety is 5. Wind bracing has been proportioned for a pressure of 30 lbs. per square foot on a surface twice the area of one face of the truss, plus area of floor system, plus the area of face of train taken at 10 ft. vertical height.

The material used in the superstructure is open-hearth steel and wrought iron. Towers and heavy compression members, such as lower chords and centre posts, are of steel, as are all the pins. All tension members are wrought iron. The only use made of cast iron is in the pedestals on the masonry and in filling-rings; the castings at the top of the towers are all steel.

The whole of the superstructure is pin-connected. The towers contain four columns each, and each column is made up of plates and angles in sections of about 25 ft. in length, braced with horizontal struts and with tie-rods. The batter of columns at right angles and the centre line of the bridge is 1 in 8. In the cantilever trusses the lower chords and centre posts are made of plates and angles latticed; the intermediate posts are made of 12 in. and 15 in. channels, latticed. The upper chords of the cantilevers are 8 in. eye-bars, the shore arm having a compression member 18 in. deep, composed of plates and angles packed between the chord-bars.

The shore ends of the cantilevers are attached to short links revolving on pins anchored to the masonry; these links serve as rockers and allow for the expansion and contraction of the shore ends of the cantilevers. Expansion joints are also provided for at the connection of the intermediate span with the river ends of the two cantilevers, the intermediate span being suspended from the extreme ends of the river arms.

The floor beams are 4 ft. deep, and are made of plates and angles; they are riveted to the posts. There are four lines of longitudinal stringers, resting on top of the floor beams; these stringers are plate girders 2 ft. 6 in. deep. The ties are white oak 9 in. by 9 in., spaced 18 in. between centres; every other tie projects to support a plank walk and hand-railing, which latter is made of cast-iron posts 6 ft. apart, and four longitudinal lines of 1¼ in. gas piping. The guard timbers are of white oak 8 by 8 in.

All masonry is built of Queenstown limestone, in courses of 2 ft. rise. The piers for the towers are 12 ft. square under the coping, and have a batter of ⅛ in. to the foot; each pair of piers is connected by a wall 3 ft. 9 in. thick at the top, and battering the same as the piers.

The anchorage-piers are 11 ft. by 37 ft. 6 in. under coping, with a batter of ⅛ in. to the foot. They rest on a platform consisting of twelve iron plate-girders, 2 ft. 6 in. deep and 36 ft. long; under these plate-girders are eighteen 15-in. I beams, through which the anchorage-bars pass, in such manner as to distribute the pressure over the entire mass of masonry. Each anchorage pier contains 460 cubic yards of masonry, weighing 2,000,000 lbs.; as the maximum uplifting force from the cantilevers under the most unfavorable position of load is only 678,000 lbs., it will be seen that this upward force is amply counterbalanced.

The shore arms of the cantilevers have been erected on false works in the usual manner, and after their completion the river arms were built out panel by panel, by means of a traveling crane, projecting over the completed portion, and advancing as each panel was in place and its bracing adjusted. The centre, or intermediate span of 120 ft., is of a design which allowed its being built out from the river arm of the cantilever until reaching the middle panel, which was accurately fitted to close the gap between the two sides.

The near approaches to the main structure, on both sides, are substantial iron trestle resting on masonry foundations erected upon solid rock.

The Basis of Payment for Railroad Mail Service.

The following summary of the report on the basis of payment for railroad mail service is telegraphed from Washington:

The Postmaster-General has sent to Congress the report of the committee appointed under the provisions of an act passed last March, to prepare an improved plan of carrying the mails on railroad routes. The committee was composed of Richard A. Elmer, Second Assistant Postmaster General; W. B. Thompson, General Superintendent Railway Mail Service, and Isaac C. Slater, Superintendent of Railway Adjustment. The report describes the operations of the committee in detail, and sets forth the sources of its information and the reasons for each of its recommendations.

The practical objections to the present law, the committee says, are: First, that no discrimination is made between service performed in apartment cars accompanied by clerks and closed mails carried in bulk in baggage cars. Second, the matter of frequency is covered by the indefinite expression, "due frequency." No discrimination is made where the same weight of mail is carried between lines running 6, 7, 12 or 14 round trips per week, the less frequent securing the same rate as the most frequent. Third, the matter of speed is disposed of with the expression "due frequency and speed," and does not enter into the rate of compensation. Fourth, the size of cars or apartments to be used is not provided for in a manner sufficiently definite to be continued as an expression of the requirements of the Post-Office Department. Fifth, specific allowance for railway post-offices is an unreasonable method of compensating for the service required. Sixth, the regulation requiring railroad companies to deliver mails into terminal offices and also to all other offices not over 80 rods from the line of road has become a serious hindrance to efficient postal service. Seventh, the present method is defective because of the great inequality existing in many cases between the weights carried and the apartments provided.

Recognizing that the postal service is one of the most important factors in the stimulation of trade, the committee from the outset was desirous of avoiding the recommendation of any scheme which in its practical workings would throw upon the railroads the burden of rendering such a service at unremunerative rates. On the other hand, they desired to recommend a schedule of rates which would not result in an imposition of exorbitant charges upon the Government. The hope of any result from the labors of the committee lay in the adoption of a system which, taking into consideration the space required for the mail and the frequency and speed of the trips, would be uniformly applicable to all roads. In determining a plan of investigation the committee laid down the fundamental principle that a rate of pay which will in general yield the companies a return per car per mile run, not differing materially in amount from the return now realized from the running of their passenger trains, could not be other than just and reasonable. In fixing the basis of compensation the committee say that weight is no longer the chief factor in determining the requirements of the service, space being foremost, while weight becomes a modifying element only as it helps to determine what space will be required. While therefore it is proposed to pay for space, yet the amount of space and the consequent expenditure, say the committee, must be restricted by some method which in its operation will lie outside of the discretion of executive officers. Without such restriction there would be no limit to the amount expended for transportation save such as might be fixed at the will of some officer of the Post Office Department. Thus space itself would be an arbitrary basis of compensation, unsafe both for the companies and for the department. The gauge prescribed by the committee resting upon the weight of the mails, modified by the room necessary in which to assort and distribute the same, and the speed with which they are conveyed, removes, the committee believes, all possibility of improper or arbitrary allowances in determining the space upon any particular railroad.

Under the heading "space value," the committee give a series of tables showing the earnings per train mile, on most of the roads in the United States, also showing for several states the yield, per car mile on passenger traffic, including express, extra baggage, and mail. From careful study of the whole field, the committee reach the conclusion that the yield per passenger car cannot be very far from 26 cents per mile run, the majority of roads yielding less than that. They conclude, therefore, that at a rate of five miles per linear foot per mile run, or 25 cents for a 50 ft. car at the ordinary speed of 20 miles per hour, they would be getting a rate corresponding closely to the returns from all passenger traffic combined. While recognizing the great importance of speed as an element of value to the public, the committee find it very difficult to establish a wise scheme of adjustment which comprehends speed as a factor. The higher rates of speed are made not for the postal service, but in obedience to the demands of the traveling public. The committee therefore did not attempt to closely estimate the value of speed, but felt that any just rate of compensation must include speed as a factor.

On the subject of special trains the committee submits a letter from the British Post-Office explaining one method of increasing the value of the postal service, which, in some of its phases, might be applicable to the railway service in the United States. The Postmaster-General of Great Britain is empowered to call upon any railroad company to carry mails by trains, run at such hours as he may direct, and at a speed not exceeding the speed of the company's first-class passenger trains, the stopping places and duration of stoppages being also under his control. High rates of payment for this service are inevitable.

The following are the Committee's recommendations:

First—That the compensation to the railroads carrying the mails shall be determined upon the basis of the space used and the frequency and speed with which the mails are conveyed.

Second—That the space factor shall be determined by the

Postmaster-General in view of the needs of the service, modified by the weight and frequency of the mails; that the speed factor shall be determined by the schedules of the various railroads in connection with the official reports of the Railway Mail service.

Third—That the pay for all mail transportation shall hereafter be at a fixed rate per linear foot of car per mile run, this rate to cover the entire cost of the service, furniture and fixtures in the car, transportation of clerks, etc.

Fourth—That the Postmaster-General may at any time order an increase or a reduction in the amount of space to be paid for, if, after a weighing, it be found that there has been a sufficient increase or diminution in the amount of mails transported on any railroad to require the same.

Fifth—The closed or pouch mails now carried in express or baggage cars, without postal clerks accompanying them, requiring no space for distribution *en route*, shall be paid for on the following basis, viz.: The aggregate weight of the closed or pouch mails carried on any road on all trains for 24 hours shall be made the basis of pay, and this aggregate weight, reduced to an equivalent in linear feet of car space in the following proportions: Two hundred pounds of mail or less shall be rated as the equivalent of six linear inches, to be paid for at the rate of 5 mills per linear foot per mile run. Five hundred pounds of mail shall be rated as one linear foot, and for each additional 500 pounds one linear foot of car space shall be allowed, with the proviso that the pay for transportation of mails upon any railroad route for six round trips per week shall not be less than $35 per mile per annum.

Sixth—That the side service be discontinued.

Seventh—That the pay for the railway post-offices at a speed of 20 or less miles per hour between termini be 5 mills per linear foot, inside measurement of car space per mile run, and for each increase of speed amounting to 2 miles per hour, up to and including 30 miles per hour, one-tenth of a mill; 22 miles per hour, 5.1 mills; 24 miles per hour, 5.2 mills; 26 miles per hour, 5.3 mills; 28 miles per hour, 5.4 mills; 30 miles per hour, 5.5 mills, and for each additional mile per hour, one-tenth of a mill. It is further recommended that in the adjustment of space by linear feet for railway post-office a daily average weight of 500 pounds of mail or less shall be entitled to pay for space not to exceed 13 ft.; from 500 to 1,000 pounds, space not to exceed 15 ft.; from 1,000 to 2,000 pounds, space not to exceed 25 ft.; from 2,000 to 4,000 pounds, space not to exceed 40 ft. And we recommend that no change in the allotment of space shall be made until the average weight reaches 6,000 pounds. For 6,000 pounds, 50 ft.; for 8,000 pounds, 60 ft., the weight to be ascertained by a weighing of not less than 30 consecutive days, and no additional space shall be paid for unless it is found to be necessary.

In all railway post-offices the load should not exceed double the greatest weight specified for the respective lengths, and for any gross weight carried on two or more trains daily the space may be sub-divided upon the gradients of space for lower weights, as the nature of the service may require, with the further provision that the Postmaster-General may increase the compensation upon any railroad route not to exceed 50 per centum per annum for special mail trains performing service upon schedules fixed by him.

In all these estimates the minimum car width should be fixed at 8 ft. 6 in. inside measurement.

Steam Car for Street Tramways.

The Baldwin Locomotive Works, of Philadelphia, have just completed an order from the Government of New South Wales, Australia, for a combined motor and car, of which we give engravings this week, for their street tramway service, built from a design submitted by Mr. Downe, the Superintendent of Motive Power of steam tramways in the city of Sydney.

The car may be described as a combination of an ordinary tram-car with a motor of somewhat new design, in consequence of which and the principle of engine adopted, an increased number of passengers are conveyed at a minimum expenditure of steam power. The car is divided into compartments, somewhat similar to those now in use in that city, with the exception that space is reserved at one end to receive the motor; and, with a view to lessen the chances of accident, passengers can only enter and leave the car on the side nearest the footpath. It is a double-decked car, the upper deck running the whole length of the car, and is accessible by means of two staircases, the entrance to which is on the same side as the lower compartments. The upper deck of the car is reserved for those wishing to smoke. When the engine is in position in the car no inconvenience can be experienced by outside passengers from heat, as the chimney is surrounded by an iron casing, extending the whole distance between the two roofs; the heat is thrown off above the level of the upper roof.

The motor is completely self-contained, all that is required after steam is raised being to move it into the car, lower the sole bars about one inch on to the bearing plate provided, connect the chimney and couple the vacuum brake tube; the car in front is then closed, all the machinery hidden, and the car is ready for work.

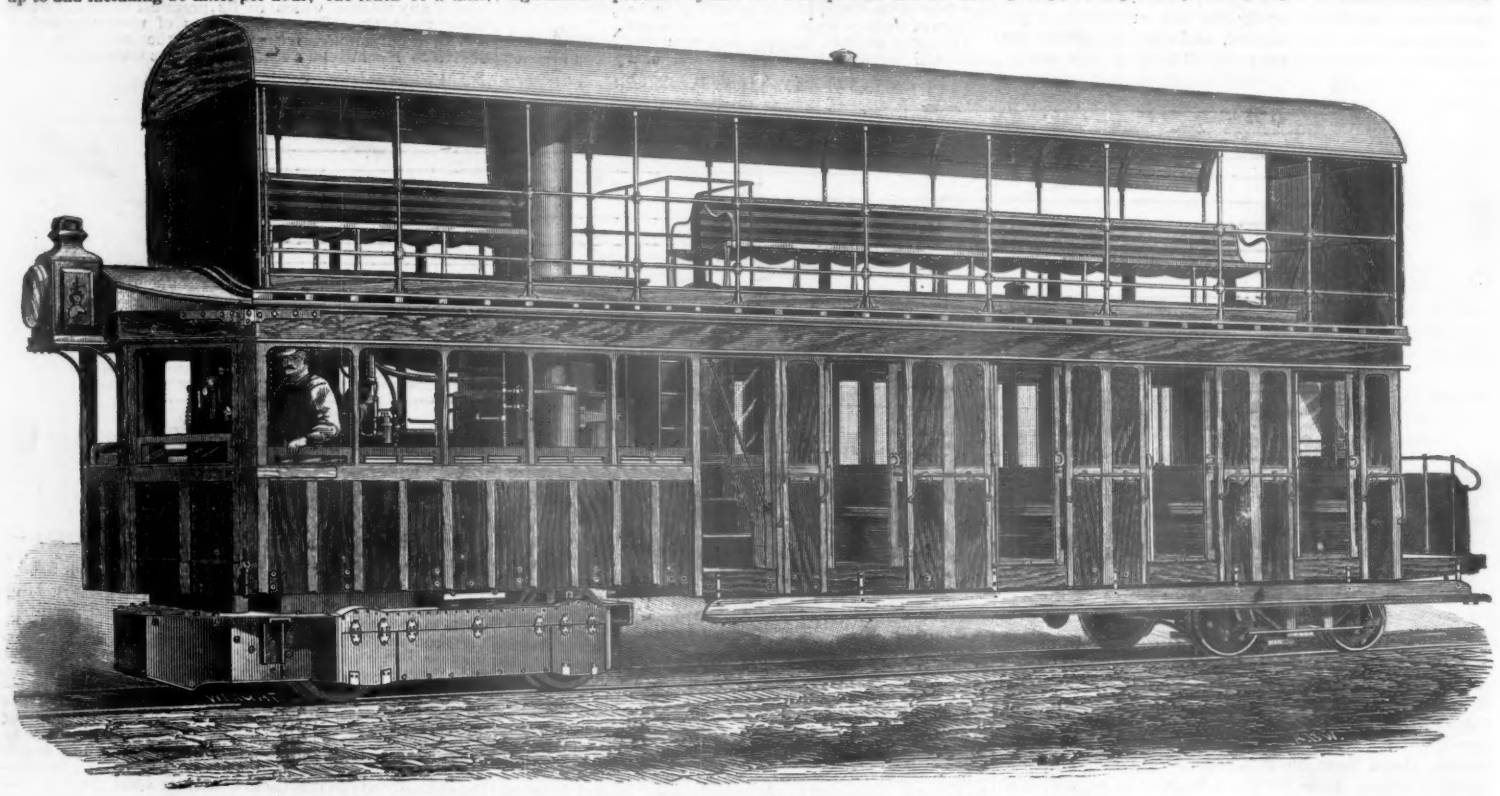
The motor consists of a substantial framing on which is mounted a steel boiler, with copper fire box of special design and ample capacity for supplying steam to a pair of compound engines working directly on the driving axle. The cylinders of these engines are fitted in what is known as the tandem form; a metallic stuffing box is fitted between the two the length of it, being the only distance separating the high and low-pressure cylinders. Both pistons are attached to the same rod, and worked by the same crank; the valves are also a departure from the ordinary motor practice, they being of the piston type, and actuated by Joy's gear. The cylinders are supported on wrought-iron standards fixed on to the axle boxes, and they are also further supported on the smoke box end of the boiler; stays running from standard to standard and carrying the motion bars also assist in making the whole of the framework as rigid and substantial as is required, with the exception of a small safety link, to act in cases of emergency. It has been demonstrated in practice that no connection is necessary between the motor and the car beyond the resting of the latter on a suitable base in the former. Ample brake-power is provided with Eames' vacuum brake, so arranged that it can be applied to either engine or bogie, separately or combined. The cylinders are 9 in. and 12 in. diameter and 12 in. stroke. Driving wheels 2 ft. 6 in., wheel base 5 ft. 6 in. Steam pressure 130 lbs. to the square inch.

This car, which is 38 ft. long, including the spaces occupied by the engine, has a total wheel-base of 30 ft., and has been designed to carry 80 passengers, at a speed of 10 miles an hour on a gradient of 1 in 19, or 278 ft. to the mile. Apart from advantages that are expected in departing from the ordinary practice in the construction of the motor, a still further gain will be effected by the combination, for while the ordinary motor with an excessive load has only its own weight to rely on for adhesive force, this car, if so loaded, throws nearly half its live and dead weight upon the driving-wheels, thereby giving additional adhesion, and almost entirely overcoming the slipping usually experienced in starting an overloaded train. By the introduction of a change valve having 1¾-in. travel, and worked by a lever, the driver can at will put all four cylinders in high pressure or compound while running. The advantage of this in a city having steep grades like Sydney will be fully appreciated, for should any difficulty be experienced in ascending, the driver, by simply changing the valves, has at once the power of two ordinary motors to overcome the grade, and the boiler has been made with increased heating surface to meet such an emergency.

This car has been designed with a view to comfort, safety and economy.

The Commissioner of Railways in New South Wales having approved the design, the Government of that colony sent their Superintendent of Motive Power to this country to inspect this motor and car. Several tests have been made on the Philadelphia & Reading Railroad, the results of which are considered very satisfactory.

It has been forwarded by train to San Francisco, thence by mail steamer to Sydney, Mr. Downe accompanying it to make further tests of its efficiency on its own tracks. There is every probability if the trials in Sydney confirm those made here of its being adopted as the standard type for that city.



STEAM CAR FOR STREET RAILROADS.

Built by the BALDWIN LOCOMOTIVE WORKS, *Philadelphia.*

The Carrying Capacity of Freight Cars.

[Report of meeting of the Master Car-Builders' Club, Dec. 20, 1883.]

The PRESIDENT (Mr. Leander Garey) announced that the subject for discussion would be "The carrying capacity of freight cars."

Mr. C. A. SMITH—I have always advocated an increase in the carrying capacity of cars. The M. C. B. standard axle was adopted with the idea that no car could carry more than 10 tons. Now cars are being marked 50,000 lbs. capacity, while probably a majority of those now building have a capacity of 40,000 lbs., which is generally the standard carrying capacity of large cars at the present time. This great change has been made in the last 10 years, since the adoption of the M. C. B. standard axle.

Many cars are loaded with 50,000 lbs. and 60,000 lbs. when it can be put into them. The capacity of the freight car has not been definitely settled yet; probably 50,000 lbs. is not the stopping point. Many cars now running are carrying 40,000 lbs. on a standard axle just as well as the same cars carried 20,000 lbs. a few years ago. Wheels can be made to carry this load safely, and there appears to be no disadvantage in carrying the heavier load. It is difficult to get 25 or 30 tons into a car, and even a load of 10 tons cannot always be obtained. The average load per car actually carried would assist us to find the best capacity of a freight car.

A car to carry 30 tons will be of great length, and many think that a car cannot be increased in width. I fail to see why, though some freight-houses can barely be entered by cars of the standard width. I am an advocate of increasing the size of journals and axles in proportion to the load. Our standard axle should be 5 in. diameter and be parallel right through the centre, and then there would be no spring even with 25 or 30-ton loads. There are objections to changing anything of that kind, but the freight would be carried more cheaply, and there would be a saving in repairs. A radical change in all draw-bar and spring attachments would also be necessary.

The improvements which have been made in the last ten years in the construction of cars are not in proportion to the increased loads carried. Many cars are built almost the same as they were 10 years ago, and are not strong enough to take the loads with the heavy engines now running.

Mr. BLACKALL—I would ask Mr. Smith if in this he would also propose a radical change in the rails and bridges?

Mr. SMITH—Bridges are now made to carry a train of locomotives safely, and rails are made of steel.

Mr. PARTRIDGE—I am not very well posted on this particular subject. However, lately I have heard a good many points on both sides. On one road the average load per car is only seven tons and consequently all their cars are not built heavy enough to carry 40,000 lbs., the usual loads being hay, furniture, shoes and general merchandise, considerably under the capacity of the car. In case of delay or transfer of freight the 40,000 lbs. which comes out of the

large car must often go into an old 10-ton car, which when put into a heavy train is apt to get discouraged and let go, causing an expensive accident. A certain road was often called upon to load 50,000 lbs. if they had a car for it, and therefore every car was marked 40,000 lbs., and those too weak for this load were sent to the scrap heap so as to bring the standard up to that point. The extra cost of building or hauling strong cars is small. If every car was capable of taking 50,000 lbs. strong cars need not be sent empty over the road in order to pick up these loads which were waiting for them at distant stations. Loads greater than 40,000 lbs. can only be carried by a better cast-iron wheel.

A general manager informed me that he proposed to find out the best size of load for a railroad to handle, ascertaining the average loads the cost of carrying in 10-ton loads, in 20-ton loads and in 30-ton loads, and so determine the most economical size of car, taking into account the cost of cars and repairs. When this is decided, the car-builder is relieved of all further responsibility and designs his car to carry that load with the greatest economy of repairs.

Mr. HACKETT—There is little difference between the 20-ton and the 10-ton car in regard to repairs, except in the drawheads. There is a little more expense in handling the heavy cars.

Mr. BLACKALL—We have a large number of four-wheel gondola cars, and from our experience I think that 9,000 lbs. on one journal of the M. C. B. axle is as much as the journal ought to carry. Beyond that weight journals run hot.

Mr. LEIGHTON—I have always advocated a reduction of dead weight, especially in passenger cars, and I doubt the economy of making cars to carry 50,000 lbs., though it is possible to do so by increasing the size of the axle and stiffening the car. A car that will carry the average load will probably be the most economical. Some reduction of the dead weight in proportion to the load carried has been effected in the last 10 years.

Mr. C. A. SMITH—The disadvantage of small cars is not so much in weight as in the great number of parts—drawheads, trucks, wheels, etc.—employed in hauling a given load. The saving effected in this respect by long cars is very great, and it becomes a question how long a freight car can be made.

Mr. ANGUS SINCLAIR—The first increase of loads took place when narrow-gauge roads were introduced, as they carried freight with less dead weight than the standard gauge. To meet this standard gauge cars were more heavily laden. The increase in repairs was not in proportion to the increase of load, and consequently the heavy load was the cheapest. It is desirable that a train should consist of as few vehicles as possible for the load carried. A train was thus reduced from 25 or 30 cars carrying 10 tons each to 20 cars carrying 18 or 20 tons each, and it was found that the shorter train was the cheapest in repairs. It is desirable to make cars adapted for their main duty—the conveyance of through traffic. A standard maximum car-load cannot be adopted until the road-beds become more uniform all over the country. With long journals, 20 tons is not the limit of the economical load for a through road. Transferring is objectionable and will probably be abolished.

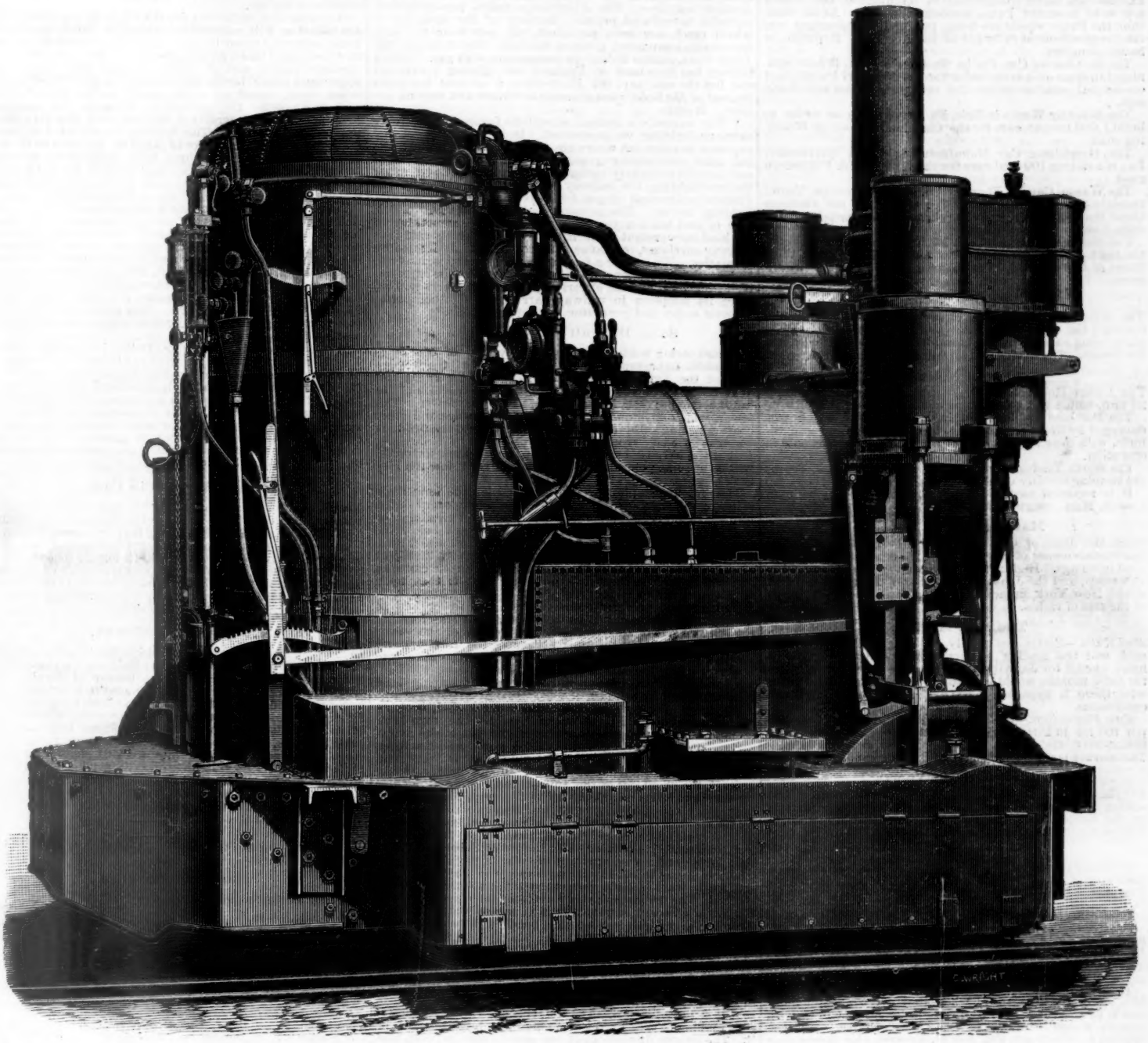
Mr. HOIT—There is little difference in the repairs of cars of large and small capacity when nearly new, though there may be some on old cars.

Mr. C. A. SMITH—A car 40 ft. long and 9 ft. 6 in. wide would carry 30 to 35 tons, and would effect 20 per cent. economy in haulage. Good wheels, larger axles and journals, and a radical change in the draw-bar fixtures would be required.

Mr. PETER SMITH—I believe there is no advantage in largely increasing the capacity of cars. The average tonnage per car from the West to New York is about 14 tons, and the average from New York to the West is about 8 tons. We are sometimes required to carry 25 tons, but it has not been carried on one car yet. I had occasion lately to load 46 tons in one piece. I think we might increase our flat and coal cars. A car sometimes runs to the West with one piano in it, or two barrels of sugar, or four or five barrels of herrings or two or three barrels of ale. A car seldom carries over seven tons from New York to the West. Many old 10-ton cars come in with 18 tons, and many 20-ton cars come in with 10 tons. Long cars might be built for carrying oil or similar freight, but increase in the size of box cars is unnecessary.

The PRESIDENT—Ten years ago, the majority of coal "jimmies" had a capacity of 4 to 4½ tons. I advocated the building of some to carry 6 tons, and to-day they are carrying 8, 10 and even 12 tons. I then induced our people to build some 8-wheel hopper bottom coal cars to carry 15 tons. From that grew up the 40,000 lbs. cars. Having set this ball in motion, I cannot stop it. There is no medium in any direction that the American people take. It is either away up or away down. The tendency now is to go away up on the carrying capacity of cars. There are so many elements that enter into this subject that we get hold of gradually, and we are being taught by experience, which I fear will be quite expensive in some respects. Heavy bodies have to be moved slowly, and 50,000 or 60,000 lbs. cars must necessarily be started slowly in order to keep them together. They ought also to be run at a low speed, unless they can be controlled at a high speed, a problem not yet solved. Taking that view of the subject the time required to move a certain amount of freight a given distance would probably be increased. That is not characteristic of our country; we want dispatch, and as the ordinary freight car can be moved at 25 or 30 miles per hour with less cost for repairs than at 12 miles per hour, it would appear that a 40,000 lbs. capacity car is about the limit. If we can control trains and run them 25 miles per hour with as many cars loaded at their full capacity as the locomotive can handle, we have arrived at a point where we can transport our freight at about the lowest limit as to expense. The locomotive of to-day is very similar to that of 12 years ago, though it is now moving about double the tonnage. That shows that we were not in those days doing the best that we could; now we probably will overdo the matter. I would advocate the increase of carrying capacity for coal cars up to 50,000 lbs., which can be handled with economy in solid trains. If you sandwich in a few cars of 25 tons capacity, loaded, with a good many cars of a lighter build and less capacity, the repairs will increase very rapidly. I have seen many demonstrations of this. It has been shown that nothing can be gained in the general traffic of the country by an increase of carrying capacity, and it will be some time before we can regularly load cars up to their full capacity of 40,000 lbs.

Mr. LENTZ—Coal cars can be built to carry 40,000 lbs., costing no more for repairs than smaller cars, which are injured by running in the same train with larger cars. A 4-in. journal is large enough for 60,000 lbs. flat or coal car. I do not think an increase in the size of house cars advisable.



STEAM CAR FOR STREET RAILROADS.

Built by the BALDWIN LOCOMOTIVE WORKS, *Philadelphia.*

TECHNICAL.

Locomotive Building.

The Baldwin Locomotive Works in Philadelphia are completing orders for consolidation freight engines for the Denver & Rio Grande, and the New York, West Shore & Buffalo roads. They have also several engines with Wooten fire-boxes in the shop for the Philadelphia & Reading road.

The Chicago, Burlington & Quincy shops at Aurora, Ill.,

are to build 14 new locomotives for the road. Part of the shops are working overtime.

The Canadian Pacific shops in Montreal have just completed for the road three new engines with 17 by 24 in. cylinders and 62 in. drivers. These shops are now nearly in full operation.

The Brooks Locomotive Works in Dunkirk, N. Y., are building 10 new locomotives for the Rochester & Pittsburgh road.

The Rhode Island Locomotive Works in Providence are filling an order for mogul freight engines with 19 by 24 in. cylinders for the Central Vermont road.

The Lehigh Valley Railroad shops recently completed a new passenger engine for the road. They are now building two locomotives which present a sharp contrast. One is a small engine for the use of the Superintendent, which is made as light as possible, and the other is a tank-engine for special service as a pusher, which is to have 10 driving wheels and a two-wheeled truck at each end.

Car Notes.

The Atchison, Topeka & Santa Fe Co. has 13 new fruit express cars under construction in Wilmington, Del., which are to be mounted Paige steel-tired wheels. At the same shop the Paige wheels are being put under 5 passenger cars for the government railways of the Argentine Republic, in South America.

The St. Charles Car Co. in St. Charles, Mo., is now running full time on a large order for the Missouri Pacific, and on several smaller orders for refrigerator cars and dump cars.

The Erie Car Works in Erie, Pa., have taken an order to build 1,000 freight cars for the Cleveland, Lorain & Wheeling road.

The Harrisburg Car Manufacturing Co. in Harrisburg, Pa., is building 100 coal cars for the Rochester & Pittsburgh road.

The Wason Car & Foundry Co. in Chattanooga, Tenn., recently completed 100 box and coal cars for the Alabama Great Southern road, and has taken another order for the same company.

The Haskell & Barker Co. in Michigan City, Ind., has contracted to build 1,000 box cars for the New York, West Shore & Buffalo road, to be paid for in 20 quarterly installments. The contract price named is $494,000, at the shops.

Bridge Notes.

The King Iron Bridge Co. in Cleveland, O., has taken the contract for a new highway bridge at Delaware, O., its plans being considered the best, although the bid was not the lowest. The bridge will be 240 ft. long and 24 ft. wide.

Iron Notes.

The Union Rolling Mill Co. in Cleveland, O., is rebuilding its mill, which was recently burned down.

The Portland Rolling Mill in Portland, Me., which was damaged by fire some time ago, has been repaired and rebuilt, with the exception of the puddling mill, and is now in operation.

The South Tredegar Iron Works in Chattanooga, Tenn., are running steadily on spikes, fish-plates and nails.

It is reported that a large rolling mill will be built in Lowell, Mass., shortly.

Manufacturing Notes.

Since the death of Gen. Lysander Flagg F. A. Brigham has become owner of the patent for Flagg's safety gate for road crossings. Rights to use this gate have been sold to 126 roads, and the Jonson Foundry and Machine Co., 118th street, New York, manufactures the gates and has charge of the sale of rights.

The Rail Market.

Steel Rails.—Prices are steady at $35 to $36 per ton at mill, and the leading makers report plenty of orders on hand, except for January and February delivery. Orders for those months would probably be welcomed, but otherwise there is apparantly no disposition to make unusual concessions.

Rail Fastenings.—Spikes are still quoted at $2 50@$2.60 por 100 lbs. in Pittsburgh, and track-bolts at $2.75 to $3.10. Splice-bars are quoted at 1.75 to 1.85 cents per pound. The market is reported dull, with light demand.

British Rail Exports.

For the month of November and the eleven months then ending the exports of steel and iron rails from Great Britain to the United States and to all countries are reported as follows by the Board of Trade, in tons of 2,240 lbs.:

	November.			Eleven months.		
	1881.	1882.	1883.	1881.	1882.	1883.
To United States:						
Steel rails	10,951	4,636	6,702	182,051	167,142	63,579
Iron rails	4,393	.....	.....	92,872	21,127	2,593
Total	15,344	4,636	6,702	274,923	188,269	66,172
To all countries:						
Steel rails	35,152	52,292	57,488	547,522	687,416	695,905
Iron rails	6,659	2,014	1,913	115,265	44,722	23,913
Total	41,811	54,306	59,401	662,787	732,138	719,818

The exports to the United States were larger in November, 1883, than in 1882, when they were exceptionally small, however. All the comparisons hereafter will be with months of small exports to the United States. But the exports to this country in November were also larger than the average for the year, but so very small that they are without significance. For the eleven months the exports to this country were 65 per cent. less than in 1882, and 76 per cent. less than in 1881.

But the British exports to all countries, notwithstanding this great falling off in the American takings, were but little less than in 1882 and were a twelfth more than in 1881. For the takings of countries other than the United States were larger in 1883 than in any other year for a long time. In some recent months the shipments to these countries were not as large as in 1882, but in November last they were 52,699 tons, against 49,670 in 1882 and 26,467 tons in 1881. While for the 11 months they have been:

	1881.	1882.	1883.
Tons	387,864	543,869	653,646

The last year, therefore, seems to have been the great railroad building year with those countries which get the chief supplies from England, like the British colonies and Mexico. We took only 9 2 per cent. of the total British exports in 1883, against 26 per cent. in 1882 and 41¼ in 1881. Of the exports in 1883 no less than 217,202 tons (30 per cent. of the whole) went to the unspecified "other countries," 121,911 tons (17 per cent,) to British India, 117,253 tons (16¼ per cent.) to Australasia, and 74,243 tons (10¼ per cent.) to Canada. No other country took as much as the United States, and specified European countries altogether only 86,965 tons, or 12 per cent. of the whole.

The Basic Process.

Mr. Jacob Reese, the inventor of the basic dephosphorizing process, has just sold letters patent No. 175,300 to Messrs. Bakewell & Kerr, patent attorneys, of Pittsburgh. The patent is for the rerolling of steel rails, and was bought by Bakewell & Kerr for one of their clients, whose name and the price paid are not stated.

A New Valve Gear,

Morton's valve gear, which is worked by the motion of the connecting rod without the use of any eccentrics, has been introduced in Scotland, where it is being tried on a locomotive on the Caledonian Railway. A die-block sliding in a curved link is used for reversing, the motion in this respect resembling the ordinary link motion. This gear appears to avoid the weak point of Joy's motion, the long travel of the sliding-block, and therefore its development will be looked forward to with some interest.

Electric Lights for Cars.

It having been proposed to use primary batteries for the electric lighting of carriages, etc., which cannot well be connected with dynamo machines, the London (Eng.) *Electrician* of Dec. 1 says that all electric lighting may acquire a reputation for costliness unless the public is informed that electric lighting by primary batteries must, at least so long as zinc is the element consumed, remain enormously costly as compared with electric lighting by currents from dynamo machines. The *Electrician* refers especially to a recently introduced primary battery of the cheapness of which much has been published, ½d. per hour for each five-candle lamp being given as the cost. But this, says the *Electrician*, makes it dear in comparison with gas. Such a battery has been used in England for lighting a railroad car, but the cost, says the *Electrician*, *is at least ten times the cost of the light when dynamo machines and engines are used.* It adds:

"Why so costly a system should be favored for railway carriage lighting we cannot tell. It is certainly not our province to point out where gas has its special applications, but until satisfactory arrangements of dynamo machines and durable secondary batteries in brake vans can be made the best lighting for railway carriages is undoubtedly the Pintsch compressed oil gas, for convenience, cheapness and lighting power. The primary battery that shall oxidize iron or lead has not yet appeared, and until something of the kind does present itself it may be confidently said that railway carriages, or rooms, will not be cheaply lighted by primaries. We believe a form of lead primary is likely to be brought out ere long, and if this is the case the superiority of the incandescent electric light over all others will enforce its adoption in railway carriages and other places where a motor and generator are not admissible."

Some Difficult Tunnel Work.

An engineering work of some intricacy and of considerable public importance is now progressing at the western edge of the Fairmount Reservoir, close to the Fairmount Water Works, in connection with the construction of the lower section of the Manayunk intercepting sewer. This sewer, which is intended to receive the sewage and other contaminating substances which now flow into the drinking water of the city from Manayunk and Falls of Schuylkill, will ultimately be extended southward, so that its outlet will be at some point on the Delaware River below the city limits.

The present plan, however, is intended for the immediate relief of the water supply, and provides a temporary outlet into the Schuylkill at a point just above the Fairmount, or Callowhill street bridge. One section, that just below the Girard avenue bridge, and extending around the Turtle Rock, has been completed; the second, between that just mentioned and a point above Fairmount, is under contract and will be built in the spring, and the third is that upon which work is now in progress.

Owing to the peculiar courses which the sewer had to follow it was necessary to tunnel under the rocks forming the western side of the reservoir, one portion of the sewer passing across the southeastern corner of the forebay, and bending around to the west so as to afford the outlet into the river below the dam. This work is being done by Contractor James F. Kennedy, active operations having been commenced on Nov. 3 last.

Six gangs of experienced workmen are engaged, working by night and day, 22 hours out of the 24. The men have an hour at noon and an hour at midnight, but in the morning and at night as each gang stops work another force goes on duty, so that the least possible time is lost. The work is a very difficult one, owing to the nature of the ground, the small size of the tunnel, and the proximity of the forebay. The only evidence of the important work in progress, visible above ground, are the two shafts, out of which the excavated material is being taken, and the piles of rock which have already accumulated.

A representative of the *Public Ledger* on Saturday visited the Park, and in company with Mr. Kennedy and the engineer from the Survey Department, who has charge of the work, went into the three tunnels which are now being worked. The first begins at a point near the entrance to the forebay, and access is gained to it by means of a shaft from 20 to 25 ft. in depth. The tunnel bends slightly toward the forebay almost from the start, and has now been extended about 75 ft., there only being 50 more ft. before it will reach the hollow cut-out in the side of the hill (overlooking the forebay) through which the pipes pass from the pumping machinery to the basin. The rock is so very hard that much of it is broken up into such small fragments by the blasts that it is almost useless. The tunnel is but 7 ft. in diameter, thus making it very hard for the men who have to work in it. The outside dimensions of the sewer will be 6 ft. and the inner 4½ ft., so that the arch will have to be turned from the inside.

The second tunnel is being opened from the other side and in the opposite direction to that above referred to. It is entered from a shaft in the old Fairmount garden, a little to the south of, but close to, a spring in the hillside, which is probably familiar to all frequenters of that portion of the Park. In beginning this tunnel the workmen had to contend with the difficulties of a rock-bed and a roof of clay. As a result, artificial supports for the roof had to be constructed, and the cutting was conducted with the utmost care. The strata of rock rose gradually, however, and the men are now slowly blasting their way through a mass of very hard stone, toward the same point aimed at by the first tunnel.

The third tunnel has been begun at the base of the park wall, fronting the river, and its inner end is 40 ft. from the commencement. It is directly beneath the garden, passes throuth an almost seamless rock, and when completed will connect with tunnel No. 2, which is now 50 ft. long, out of a total of 150 ft. The tunnel from the park wall will be 118 ft. long.

The gap mentioned (facing the forebay, and through which the supply pipes to the reservoir pass) is about 25 ft. long, but to construct the sewer here especial care will have to be taken in order to protect the water in the forebay from becoming contaminated, as well as to make the sewer itself perfectly secure. Coffer dams will be constructed in order to permit the necessary foundations to be built; the sewer will be carefully constructed, cemented within and without with Portland cement, and the whole will be protected and covered with a wall of solid masonry along the whole distance.

The blasting is done by means of an electric battery, the material used in the charges being giant powder contained in cartridges. The contractor states that at night the charges can be heard in the city at long distances from the point of the firing and that in the tunnel itself the movement of the water in the pipes leading to the basin can be distinctly heard. Another interesting point noticed was the warmth of the tunnels. Mr. Kennedy states that no matter how cold it may be outside the men are always comfortable without their coats while under ground, and are only obliged to don their wraps as they leave the tunnels when a charge is to be fired.—*Philadelphia Ledger.*

Parlor Sleeping Cars.

The Gilbert Car Manufacturing Co., of Troy, N. Y., has just completed two parlor sleeping cars for Messrs. Leve & Alden, which are to run between Fernandina and Cedar Keys, over the Florida Transit & Peninsula Railroad. The cars are named, appropriately for the land of flowers, "Heliotrope" and "Mignonette," and present several points of novelty in their arrangement. By day the cars resemble ordinary parlor cars fitted with revolving seats, except that the spaces between the windows appear to be somewhat large, and project some inches further than usual into the interior of the car.

When making up the car for the night the revolving seats are folded up flat, removed from their pedestals, and stowed away under the lower berths. Each panel between the windows is hinged like a door to the side of the car, and when opened reveals a sort of closet, in which the bedding and upper and lower berths are stowed away. These panels, when open, stand at right angles to the sides of the car, and form the partitions between the sections, extending to the underside of the top girth, 6ft. 11in. from the floor of the car. The bedding is not folded up, but is hung full length from hooks fixed to the sides of the car, and in the daytime is hidden from sight by the partition being folded against it. The light wooden frames forming the berths are provided at the ends with metallic fastenings, which take into suitable slots cut in the partitions.

The car has a buffet or small compartment with a stove and appliances sufficient to serve a light meal. A smoking room, ladies' and gentlemen's toilet room, lavatory, porter's closet and linen closet are also provided, but there is not a separate drawing-room or state-room. The main portion of the car measures 31 ft. 6 in. long inside, and contains 10 sections. It is lit by six windows on each side, the lower lights measuring 25⅛ in. by 27½ in., and the upper 25⅛ in. by 9½ in., sight size. The seats in the smoking room run longitudinally, and can be used as sleeping berths, making 22 berths in all

When used as a day or parlor car the least width inside is 7 ft 11 in., the width at the windows being 9 ft. The height in the centre is 10 ft. 3 in., and the length over body is 56 ft. The interior is finished in light colored bay wood with panels of dark-figured Spanish mahogany, French polished, and hand painted with designs of flowers, etc., treated conventionally. The ground color of the head-lining is a rich red, decorated with stencil work in green and gold. The exterior of the cars is painted a deep red, ornamented by outlines of leaves, etc., in gilt.

Carrying Gas in Cars.

Messrs. McIntosh, Hemphill & Co. are interested in the construction of a tank car for transportation of natural gas. The car is being built at the Swissvale Car Works. It is an ordinary flat car containing a cylindrical tank of ½ in. steel, 10 ft. in diameter and 35 ft. long. The tank is to be filled at the Tarentum wells, and is capable of containing 20,000 cubic feet. Mr. Hemphill considers the scheme a practical one. At any rate, he purposes making the trial. —*Pittsburgh American Manufacturer.*

A Turkish Railroad.

In Turkey there is a railroad which has been in operation for some years from the Ægean at Salonica northwestward 215 miles to Mitrovitza, near the border of Servia. The traffic on this railroad in 1882 amounted to 5,346,432 passenger-miles and 10,266,250 ton-miles, which is equivalent to 34 passengers and 72 tons of freight over the whole length of the road daily. The average passenger rate was 3.48 cents per mile, 95 per cent. of the passengers being third-class. The average freight rate was 7.21 cents per ton per mile, so that this very light traffic still produced $4,413 per mile—all this on the assumption that there has been no depreciation of the value of the piaster below 8 cents, which in a country like Turkey sometimes occurs.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Eleven months ending Nov. 30:				
C., C., C. & Ind..	$3,944,949	$4,044,911	D. $99,962	2.2
West Jersey....	1,151,188	1,046 183	I. 106,05	10.1
Net earnings..	455,552	443,929	I. 11,623	2.6
Month of November:				
C., C., C. & Ind..	$354,346	$434,960	D. $80,614	18.5
New O. & N. E.	39,725	.....	.. ..	....
Second week in December:				
Bur., Cedar Rap. & Northern ...	$58,492	$60.216	D. $1,724	2.8
Chi. & W. Mich..	23,407	26.223	D. 2,816	10.8
Det., L. & No....	26,481	26,493	D. 12	....
Third week in December:				
Ches. & Ohio....	$73,405	$66,250	I. $7,155	10.8
E., L. & B. S...	14,147	13,582	I. 565	4.2
Chi & East. Ill ..	32,037	38,997	D. 6,960	17.8
Chi.. & Gd. Trunk	61,283	59,050	I. 2.233	3.8
C., M. & St. Paul	468,000	434,001	I. 33,999	78.3
Chi. & Northwest	395,800	375,000	I. 20.800	5.6
Or. Ry. & N. Co..	84,959	30,644	I. 54,315	17.7

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

Grain Movement.

For the week ending Dec. 22 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past ten years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1874	2,147,360	799,017	1,464,557
1875	2,093,025	958,855	1,630 724
1876	2,452,644	984,795	1,882,838
1877	1,524,048	1,099,339	3,561,847
1878	2,548,745	1,142,265	2,569,146
1879	3,885,013	918 954	3,086,259
1880	3,682,228	1,677,592	2,250,614
1881	3,515,916	1,795,643	1,922,472
1882	4,586,228	1,894,237	2,480,221
1883	5,150,393	2,229,355	1,85 ,482

The receipts of the Northwestern markets for the week in 1883 were thus larger than in the corresponding week of any previous year, and 564,000 bushels (12¼ per cent.) more than in 1882, when they were larger than ever before.

They were, however, 628,000 bushels less than in the previous week of this year and the smallest since last July.

The shipments of these markets were also larger than in the corresponding week of any previous year, and 335,000 bushels (18 per cent.) more than last year; but they were smaller than in any other week of 1883 except the last week of January. This year 153,263 bushels, or 6.9 per cent. of the whole, went down the Mississippi River.

In marked contrast with the Northwestern movement the Atlantic receipts in 1883 were smaller than in any corresponding week since 1875, and one-fourth less than in 1882. Not only this, but they were smaller than in any other week since April, 1882. The decrease is chiefly at New York, which received only 405,059 bushels, and but 22 per cent. of the whole, while in November it received 55½ per cent. of the whole. These New York receipts are the smallest, with one exception, since the year 1878.

The falling-off in Northwestern receipts has been pretty well distributed, but no receipts are reported at Duluth during the week under consideration, and at Toledo the receipts were the largest for four weeks.

Exports from Atlantic ports for the week ending Dec. 22 have been, for four years:

	1880.	1881.	1882.	1883.
Flour, bbls	161,959	98,055	224,983	205,784
Grain, bu.	2,196,141	1,473,826	1,446,452	1,639,946

Thus the exports in 1883 were about 280,000 bushels more than in 1882, 651,000 more than in 1881, and 359,000 bushels less than in 1880.

Coal.

Coal tonnages for the week ending Dec. 22 are reported as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Anthracite	309,524	6 9,655	D. 210,131	34.4
Semi-bituminous	107,349	105,300	I. 2,049	1.9
Bituminous, Penna.	67,481	71,580	D. 4,099	5.7
Coke, Penn.	58,219	66,433	D. 8,214	12.4

The light shipments of anthracite were partly due to the heavy snow storms of the week, preventing shipments. There will be no large tonnage reported until after the holidays. The trade is reported very dull.

The coal tonnage of the Pennsylvania Railroad for the week ending Dec. 22 was:

	Coal.	Coke.	Total.
Line of road	148,108	48,714	196,822
From other lines	62,472	9,505	71,977
Total	210,580	58,219	268,799

The total tonnage in 1883 to Dec. 22 was 12,158,144 tons, against 10,902,606 tons to the corresponding date in 1882, an increase of 1,255,538 tons, or 11.5 per cent.

Cumberland coal shipments for the week ending Dec. 22 were 37,079 tons. The total shipments in 1883 up to Dec. 22 were 2 449,765 tons.

The Southwest Virginia Improvement Co. shipped from its mines at Pocahontas, Va., over the New River Division of the Norfolk & Western road in October 18,656 tons of coal and 4.635 tons of coke; in November, 19,930 tons of coal and 5.336 tons of coke. The total output of coal from May 1 to Nov. 30 was 98,620 tons, of which 33,432 tons were converted into coke.

The anthracite coal companies have agreed upon a half-time suspension of coal mining during January, February and March by stopping work upon the last three days of each week. The idle days will be Jan. 3, 4, 5, 10, 11, 12, 17, 18, 19, 24, 25, 26, 31; Feb. 1, 2, 7, 8, 9, 14, 15, 16, 21, 22, 23, 28, 29; March 1, 6, 7, 8, 13, 14, 15, 20, 21, 22, 27, 28, 29.

Cotton.

Cotton movement for the four months of the cotton crop year from Sept. 1 to Dec. 28 is reported as follows, in bales:

Interior markets:	1883.	1882.	Inc. or Dec.	P. c.
Receipts	2,095,044	2,301,977	D. 206,933	9.0
Shipments	1,721,830	1,938,607	D. 216,717	11.2
Stock, Dec. 28	422,310	379,855	I. 42,455	11.2
Seaports:				
Receipts	3,416,350	3,461,462	D. 45,112	1.3
Exports	1,811,689	2,082,047	D. 268,358	12.9
Stock, Dec. 28	1,283,126	960,981	I. 322,145	33.6

The interior markets showing the heaviest receipts this year were Houston, Tex., 417,687; Memphis, 313,972; St. Louis, 200,477; Atlanta, 127,023; Cincinnati, 118,650, and Augusta, 109,465 bales.

The ports having the heaviest receipts this year were New Orleans, 1,068,302; Savannah, 536,727; Galveston, 452,143; Norfolk, 425,427, and Charleston, 331,977 bales. The heaviest exports were from New Orleans, 627,682; New York, 261,689; Savannah, 215,206; Galveston, 201,381; Charleston, 160,194, and Norfolk, 145,782 bales.

The *Commercial and Financial Chronicle* says: "In the table below we give the receipts from plantations in another form, and add to them the net overland movement to Dec. 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight.

	1883.	1882.	1881.	1880.
Receipts at the ports to Dec. 28	3,416,350	3,461,462	3,233,113	3,454,099
Interior stocks on Dec. 28 in excess of Sept. 1	373,154	363,370	421,161	324,187
Total receipts from plantations	3,789,504	3,824,832	3,654,274	3,778,286
Net overland to Dec. 1	261,252	244,112	220,910	199,944
Southern consumpt'n to Dec. 1	87,000	90,000	70,000	55,000
Total in sight Dec. 28	4,137,756	4,158,944	3,945,184	4,033,230

"It will be seen by the above that the decrease in amount in sight Dec. 28, as compared with last year, is 21,188 bales, and that the increase as compared with 1881 is 192,572 bales, and with 1880 is 104,526 bales."

Petroleum.

The production of the Pennsylvania and New York oil fields for November is given as follows by Stowell's *Petroleum Reporter*, in barrels of 42 gallons:

	1883.	1882.	Inc. or Dec.	P. c.
Production	1,958,340	2,192,940	D. 234,600	10.7
Shipments	2,065,602	1,404,640	I. 660,962	47.0
Stock, Nov. 30	35,505,653	33,728 555	I. 1,777,098	5.3
Producing wells	20,406	18,700	I. 1,706	9.1

The production has been exceeded only in two months of 1883, but was less than that of any month in 1882 except December. It was also exceeded in every month of 1881 and in nine months of 1880. Of the total production the Alleghany District in New York furnished 17 per cent., the Bradford District in Pennsylvania 57 per cent., the Warren District 15 per cent., and the Lower District 11 per cent.

The shipments exceeded the receipts for the month for the seventh time for the year; they had not previously done so for a number of years. Of the shipments from the wells 477,754 barrels (23 per cent.) were by rail, and 1,587,848 barrels (77 per cent.) by pipe line.

The stock on hand is all in the pipe lines. It was diminished during the month by 107,262 barrels, which is the excess of shipments over production.

The increase in the number of wells reported is largely apparent only, being due to a careful count of the small wells. There were 302 new wells completed during the month, and 16 dry holes reported; 171 new wells being drilled.

Shipments for the month are given as follows:

	Barrels.	Per ct. of total.
New York	818,374	39.6
Philadelphia	197,954	9.6
Baltimore	8,820	0.4
Boston	172	....
Cleveland	511,344	24.7
Pittsburgh	64,882	3.1
Local points	232.378	11.4
Refined at Creek refineries	231,678	11.2
Total	2,065,602	100.0

The shipments of oil refined in Creek (reduced to its equivalent in crude) were: New York, 77,562; Philadelphia, 14,679; Baltimore, 11,472; Boston, 60,634; local points, 67,331; total, 231,678 barrels.

The *Reporter* says: "This report of operations shows a large increase in the number of producing wells. Upon analysis of the table this is found to be chiefly in the Bradford field, in accordance with our recent statement that more attention was being drawn to the Bradford District as being the most promising of the producing fields. This increase, however, taken in connection with the decrease of nearly 2,000 barrels in daily average production shows that the producing power of the wells is being decreased, and that the new wells are not as productive as they have been. This same feature was prominently indicated in our last report.

"During the month under review the drillers, though energetic, have failed to develop any new field of importance. The limits of the existing districts have in some instances been supposed to be extended, but the wells thought to indicate the extension have in almost every case dwindled down to the regulation standard of productive capacity. There certainly seems to be no need for fear as to some new districts being developed which will crush prices as did Cherry Grove. It is true that Cherry Grove was as unexpected as could be possible, but at that time there were numerous locations in which there was strong probability that such a pool might be struck, whereas at present, the territory having been drilled over so completely, the chances of discovering a deposit of oil such as was brought to light in 1882 are materially lessened."

Cotton Rates.

In Chicago, Dec. 26, Joint Agent T. C. Moore addressed the following notice to the Chicago Committee of East bound Traffic:

"I have received the following telegram from Commissioner Fink, regarding the reduced rates on cotton, to take effect Dec. 27:

"'Having satisfactory information that the rates on cotton are not maintained, it becomes my duty, under the regulations, as per Joint Executive Committee circular No. 561, to announce that, taking effect Thursday, Dec. 27, the rate on cotton from all points named in circular No. 536, will be reduced 10 cents per 100 pounds below the rates named in that circular. In case this reduced tariff is not strictly maintained by all lines, a further reduction will be promptly announced.'"

Pacific Through Freights.

Shipments of through freight eastward from California points for November and the eleven months ending Nov. 30 were as follows, in tons:

	Central Pacific. Tons.	P.c. of tot.	Southern Pacific. Tons.	P.c. of tot.	Total tons.
November	5,859	47	6,517	53	12,376
Eleven months	74,018	54	61,862	46	135,880

In November the Southern Pacific took the larger share of the shipments, which it has not done before since last May. The average shipments per day for the eleven months have been 407 tons, or 40 small car-loads.

The leading items of freight for the eleven months were: Sugar, 15,558; wool, 15,254; canned goods, 14,402; canned salmon, 11.995; ripe fruit, 10,550; tea, 9,946; wine, 8,616; beans, 3,452; wheat, 3,081; rice, 2,425 tons. These ten articles made up 70 per cent. of the total shipments, while barley, borax, coffee, dried fruit and hops made 20 per cent. more, leaving only 10 per cent. made up by miscellaneous shipments. A valuable if not a heavy item was made by 1,266 tons of raw silk.

High Rates.

In Michigan many railroads are built in the lumber country for more or less temporary purposes, carrying logs and loggers' supplies, and perhaps scarcely anything else, with a prospect that they may have to be abandoned when the logs are cut. They therefore try to make hay while the sun shines; and sometimes they do. It is said that one, which will probably be permanent and not temporary, charged $4 a ton for hauling supplies 20 miles, and brought in a bill for $4.50 for transferring four barrels of sauerkraut across a river.

New Elevators at Minneapolis.

It is reported that five new elevators will be built at Minneapolis next season with an aggregate capacity of 5,000,000 bushels, as follows:

	Capacity.
Minneapolis Elevator Co. (two)	2,500,000
Northern Pacific	1,000,000
Chicago, Milwaukee & St. Paul	1,000,000
Chicago, St. Paul, Minneapolis & Omaha	500,000

This will be an enormous increase in the storage capacity at Minneapolis, and is a significant indication of what those best informed think will be the increase in grain production west of St. Paul.

The New Nickel-Plate Fast-Freight Line.

Mr. G. B. Spriggs, General Freight Agent of the New York, Chicago & St. Louis Railway (Nickel Plate), has issued the following circular regarding the organization of the Nickel-Plate fast-freight line:

"The 'Nickel-Plate Line,' a fast-freight line, will commence active operations the 1st of January, 1884. It is organized to do a through freight business *via* the New York, Chicago & St. Louis Railway; Cleveland, Columbus, Cincinnati & Indianapolis Railway (*via* Cleveland); New York Central Railroad; Boston & Albany Railroad; Philadelphia & Reading Railroad, and other roads that may hereafter be introduced. Line way-bills will be made from competing points on the above-named connections of the New York, Chicago & St. Louis Railway to Eastern destinations, *via* the Eastern roads named, and *vice-versa*, while the following competing points on this road will way-bill through to Eastern points on and *via* the Eastern roads named. All stations will receive line way-bills from such points: New York—Dunkirk, Brockton; Pennsylvania—Erie, Thornton, Girard; Ohio—Ashtabula, Conneaut, Geneva, Painesville, Cleveland, Lorain, Vermillion, Higbee, Bellevue, Green Springs, Linden, Fostoria, Arcadia, Stuartville, McComb, Leipsic, Constitution, Latta; Indiana—New Haven, Fort Wayne, South Whitley, Claypool, Argos, Thomaston, Wanatah, Valparaiso, Hammond; Illinois—Stony Island, Chicago. The line way-bills above referred to will show the revenue accruing to each road (and must accompany the freight in all cases, except as between Buffalo and Chicago direct). For instance, Cincinnati will way-bill through to New York. Cars will be carded direct to destination, and, as the principal object is dispatch, agents at junction points will use every endeavor to prevent delays, otherwise the object of the scheme will be defeated. Common cars can be used in this business until the regular line cars are supplied. The establishing of this fast freight line will in no way affect business arising at any point on this road (except Buffalo) and destined to Western, Southwestern or Northwestern points *via* any of the above-named connections of this road; such traffic will be treated and way-billed as heretofore, no matter in whose cars loaded. For shipments originating at stations on the New York, Chicago & St. Louis Railway our agents will make a freight debit-sheet to Buffalo, in addition to the line way-bill. Live stock and coal must not be treated as 'line' business. The term 'Nickel-Plate' having hitherto been applied to the whole road, it is desired in future to limit its application to the 'Nickel-Plate Line' above described, and to prevent confusion, the term 'Nickel-Plate' should not be applied to the ordinary business of the road. Mr. Charles S. Tappan has been appointed General Manager of the 'Nickel-Plate Line,' with office at Rochester, N. Y."

The Chicago Merchants' Freight Bureau.

Mr. C. M. Wicker, Commissioner of the Chicago Freight Bureau, has issued a circular letter calling the attention of railroad managers and general freight agents to the following abstract from a circular letter sent the members of the bureau a day or two ago:

"Your Commissioner feels confident that much good can be accomplished not only for the welfare of Chicago, but for individual firms of the association, and has to request that, as confidence and a desire for more harmonious action between shippers and transportation lines of the country must first be established, the members of this bureau take the initiative.

"With this in view, we desire to assure the representatives of the roads leading from Chicago that the members of this Association would exercise unusual care that all shipments are properly and truthfully described; that in cases of doubt they are permitted to examine contents of packages and report to the Commissioner any attempt to evade classification provisions.

"You are urgently requested to forward your Commissioner the evidence that other distributing points are, either with or without the connivance of their railways, in the practice of falsifying the contents of packages, that we may cooperate with the various transportation lines in breaking up this questionable practice.

"May we ask that you give this good cause the benefit of your valuable assistance? The members of this Association cannot continue this practice indefinitely unless other distributing points east, west, north and south pursue a similar upright and unquestionable course.

"We hope you will take an active interest in this matter in your territory, and would be pleased to hear from you as to any individual or united efforts being made by your road or associations in which you are interested to check this growing abuse."

The Illinois Corn Crop.

The Illinois Department of Agriculture reports that the average yield of corn per acre in that state was 28 bushels, amounting to 186,583,500 bushels, which is about 7,000,000 bushels more than the yield it reported last year. The acreage also it reports to have been the smallest (except that of 1881) for ten years. The quality of the corn is reported to be the poorest ever known, the Department putting it as 69 per cent. of the average quality. What this means is not plain; most probably that it is on the average worth but 69 per cent. of the value of good corn, which would make it worth only as much as 129,000,000 bushels of corn. The quality is particularly bad in the northern third of the state, where more than half of the corn of the state is grown. There it is given as only 46 per cent; in the central third it is 72 per cent., and in the southern third, where comparatively little corn is grown, it is comparatively good—88 per cent., though there, as usual, the yield is lighter than further north, being but 26 bushels per acre, while it is 29 bushels in the other counties.

Great Southern Dispatch.

A co-operative fast freight line, to be known as the Great Southern Dispatch, has been organized in the interest of the following companies: Pennsylvania Railroad Co.; Norfolk & Western; Cumberland Valley; East Tennessee, Virginia & Georgia; Shenandoah Valley, and the Western Maryland.

The line will operate between Boston, New York, Philadelphia, Baltimore and other points east and north of Harrisburg, Pa., and points south and west of Bristol, Tenn., and will go into operation Jan. 1, 1884.

Boston Traffic Notes.

During the month of November the Boston & Albany road received 14,597 freight cars from the New York Central at Albany, being an average of 487 a day. During the month 11,278 cars—an average of 376 a day—were sent from Boston westward. The numbers of these cars which were loaded is not given.

RAILROAD LAW.

Ejecting a Passenger.

The Supreme Court of Ohio has decided that: 1. A railroad company may charge a higher price for carrying passengers when the fare is paid on the train than it does at the ticket office, provided the price thus charged is reasonable and the fare charged on the train does not exceed the maximum allowed by law. 2. A person entering the cars without having purchased a ticket and persistently refusing to pay the usual and reasonable fare may be lawfully removed from the train. 3. The expulsion of such person may be at a place other than a railroad depot or usual stopping place, provided care is taken not to expose him to serious injury or danger. 4. Such person acquires no right to remain on the cars by offering to pay the usual fare after the train has been stopped for the purpose of ejecting him.

Kentucky Railroad Taxation.

A dispatch from Frankfort, Ky., Dec. 18, says: "The Court of Appeals to-day affirmed the decision of the Franklin Circuit Court in the case of the Commonwealth of Kentucky against the Cincinnati, New Orleans & Texas Pacific Railroad, the Chesapeake, Ohio & Southwestern Railroad and the Louisville & Nashville Railroad. In the year 1882 these three corporations refused to pay to the state the amount of taxes due on their property, which was assessed against them by the Railroad Commission, which was created by the last Legislature for the purpose of assessing railroads. The companies contended that the act creating the Commission was unconstitutional because they had no right to appeal from the decision of the Commission in case they believed that

RAILROAD EARNINGS IN NOVEMBER.

NAME OF ROAD.	MILEAGE. 1883.	1882.	Inc.	Dec.	P. c.	EARNINGS. 1883.	1882.	Inc.	Dec.	P. c.	EARNINGS PER MILE. 1883.	1882.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Eastern	284	284				$ 283,689	$ 267,621	$ 16,068	$	6.0	$ 999	$ 942	$ 57	$	6.0
Grand Trunk	2,313	2,321		8	0.3	1,516,489	1,492,128	24,361		1.6	656	643	13		2.0
Long Island	354	354				180,238	170,404	9,834		5.7	509	481	28		5.8
Pennsylvania*	2,070	1,980	90		4.5	4,473,480	4,373,826	99,654		2.3	2,161	2,209		48	2.2
Rochester & Pitts.	294	125	169		135.2	85,519	31,338	54,181		172.9	291	251	40		16.0
West Jersey	188	177	11		6.2	81,033	78,090	2,943		3.8	431	441		10	2.3
Total, 6 roads	5,503	5,241	270	8		6,620,448	6,413,407	207,041			1,203	1,224		21	
Total inc. or dec			262		5.0			207,041		3.2				21	1.7
SOUTHERN ROADS.															
Ala. Gt. Southern	290	290				107,329	98,086	9,243		9.4	370	338	32		9.5
Ches. & Ohio	517	517				335,262	300,732	34,530		11.5	648	582	66		11.3
Eliz., Lex. & B. S	130	130				60,503	61,188		685	1.1	465	471		6	1.3
Cin., N. O. & Tex. P	336	336				237,483	242,827		5,344	2.2	707	723		16	2.2
East Tenn., Va. & Ga.	1,098	901	197		21.9	411,818	360,736	51,082		18.0	375	400		25	6.2
Mem. & Charleston	292	292				159,604	136,189	23,415		17.2	547	466	81		17.3
Fla. Central & Western	234	234				43,856	39,195	4,661		11.7	187	167	20		12.0
Fla. Transit & Pen	243	243				66,920	47,098	19,822		42.2	275	194	81		41.7
Ill. Central, Southern Div.	578	578				533,388	518,457	14,931		2.9	923	897	26		3.0
Kentucky Central	220	150	70		46.7	69,219	65,183	4,036		6.2	315	435		120	27.6
Louisville & Nash	2,065	2,028	37		1.8	1,274,905	1,200,902	74,003		6.2	613	592	21		3.5
Mobile & Ohio	528	528				279,553	301,295		21,742	7.2	528	571		43	7.5
Nash., Chatta. & St. L	554	539	15		2.8	205,660	202,668	2,992		1.5	371	376		5	1.3
Norfolk & Western	503	428	75		17.5	271,279	261,235	10,044		4.0	539	610		71	11.6
Rich. & Danville	757	757				303,704	302,922	782		0.2	480	479	1		0.2
Char., Col. & Aug	343	327	16		4.9	82,021	88,528		6,507	7.3	239	271		32	11.8
Virginia Midland	352	352				147,046	136,826	10,220		7.4	418	389	29		7.2
Western N. C	200	190	10		5.3	36,132	23,337	12,795		54.7	181	123	58		47.2
Shenandoah Valley	249	240	9		3.8	78,283	56 985	21,298		37.4	314	237	77		32 6
South Carolina	247	243	4		1.6	124,820	151,681		26,861	17.7	505	624		119	19.1
Vicks. & Meridian	142	142				58,461	59,647		1,186	1.9	412	420		8	1.9
Total, 21 roads	9,578	9,445	433			4,947,240	4,715,717	293,854	62,325		501	499	2		
Total inc. or dec			453		4.6			231,529		4.9			2		0.4
CENTRAL GROUP.															
Chi. & Eastern Ill	252	252				143,175	161,704		18,529	11.4	568	642		74	11.5
Chi. & Gd. Trunk	335	335				265,682	232,695	32,987		13.9	791	695	96		13.8
Cin., Ind., St. L. & Chi	342	342				212,675	223,303		10,628	4.7	622	653		31	4.8
Cin., Wash. & Balt.	284	284				154,004	166,712		12,708	7.6	542	587		45	7.7
Cleve., Akron & Col	144	144				41,173	43,964		2,789	6.3	286	305		19	6.2
Connotton Valley†	140	106	34		32.1	32,855	21,560	11,295		52.1	235	204	31		15.2
Det., Lan. & No	226	226				141,761	140,363		8,602	6.1	583	621		38	6.1
Ev. & Terre Haute	146	146				57,649	61,642		3,993	6.4	345	422		27	6.4
Flint & Fere Marq	362	347	15		4.3	234,616	203,442	31,174		15.4	648	586	62		10.5
Ill. Central, Ill. lines	928	919	9		0.9	610,143	583,472	26,671		4.6	657	635	22		3.5
Ind., Bloom. & West	695	695				235,072	256,998		21,026	8.2	340	370		30	8.1
Ohio Central	284	232	52		22.4	95,611	103,463		7,852	7.6	337	446		109	24.4
Ohio Southern	138	138				37,017	36,625	392		1.1	196	264		68	25.7
Peoria, Dec. & Ev	254	254				60,609	55,474	7,135		13.4	239	211	28		13.3
St. L., Alton & Terre Haute:															
Main Line	195	195				123,884	155,334		31,450	20.2	635	797		162	20.3
Belleville Line	121	121				73,304	72,817	487		0.7	606	602	4		0.7
St. L. & Cairo	152	152				33,939	36,160		2,221	6.1	223	238		15	6.3
Tol., Cin. & St. L	856	550	306		55.6	103,114	83,587	19,527		23.4	120	152		32	21.0
Wabash, St. L. & P	3,520	3,425	95		2.8	1,560,120	1,525,715	34,405		2.3	443	445		2	0.5
Total, 19 roads	9,760	9,249	511			4,206,705	4,163,060	163,443	119,798		431	450		19	
Total inc. or dec			511		5.5			43,645		1.1				19	4.2
NORTHWESTERN ROADS.															
Bur., Cedar Rap. & No.	714	690	24		3.5	308,190	278,428	29,771		10.7	432	404	28		7.0
Central Iowa	401	293	111		38.3	143,244	106,353	36,891		34.3	357	367		10	2.7
Chi. & Alton	850	850				780,701	749.916	30,785		4.1	918	882	36		4.1
Chi., Mil. & St. Paul	4,670	4,380	290		6.6	2,388,000	2,072,973	315,027		15.2	511	473	38		8.0
Chi. & Northwestern	3,800	3,460	340		9.8	2,357,800	2,109,432	248,368		11.8	620	610	10		1.6
Chi., St. P., M. & O	1,280	1,085	195		17.9	570,766	515,008	55,758		10.8	446	475		29	6.0
Des M. & Ft Dodge	138	138				34.117	32,002	2,115		6.6	247	232	15		6 4
Green Bay, W. & St. P	220	220				47,835	44,323	3,512		8.0	217	201	16		8.0
Ill. Central, Iowa lines	402	402				192,808	176,332	16,476		9.3	480	439	41		9.3
Marquette, H. & Ont	103	97	6		6.2	61,000	90,891		29,891	32.9	592	937		345	36.8
Mil., L. S. & West	360	306	54		17.6	98,790	78,518	20,272		25.6	274	257	17		6.6
Total, 11 roads	12,938	11,918	1,020			6,983,260	6,254,176	758,975	29,891		540	525	15		
Total inc. or dec			1,020		8.6			729,084		11.7			15		2.9
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	1,931	988	943		95.4	498,000	287,000	211,000		72.0	258	290		32	11.0
Northern Pacific	2,365	1,419	946		67.6	1,220,300	751,633	468,667		62.3	516	529		13	2.4
St. P. & Duluth	210	196	14		7.2	133,824	128,959	4,865		3.8	637	658		21	3.2
St. P., Minn. & Man	1,350	1,058	292		27.5	845,514	913,335		67,821	7.4	626	863		237	27.5
Total, 4 roads	5,856	3,661	2,195			2,697,638	2,080,927	684,532	67,821		461	568		107	
Total inc. or dec			2,195		60.0			616,711		29.7				107	18.8
SOUTHWESTERN ROADS.															
Ft. Worth & Denver†	110	110				42,750	27,400	15,350		56.0	389	249	140		56,2
Gulf, Col. & St. F	536	430	106		22.3	236,925	244,597		7,672	3.1	442	564		122	21.8
Little Rock & Ft. Smith	173	168	5		3.0	70,000	91,852		21,852	23.8	405	547		142	26.0
Little R'k, Miss. R. & Tex	173	173				50,000	44,728	5,272		11.5	289	259	30		11.5
Mo. Pacific†	1,901	1,812	89		4.9	1,548,465	1,625,231		76,766	4.7	815	897		82	9.1
Central Branch	388	388				159,296	128,865	30,431		23.6	411	332	79		23,2
Mo., Kan. & Tex.§	2,211	2,071	140		1.9	1,280,426	1,113,830	166,596		15.0	579	538	41		8.0
Tex. & Pacific	1,487	1,412	75		5.3	610,903	619,655		8,752	1.4	411	439		28	6.4
St. L. & San Francisco	750	660	90		13.6	398,850	331,490	67,360		20.3	530	502	28		5.6
Vicks., Shreve. & Pac†	73	73				21,279	17,360	3,919		22.5	293	238	55		23,1
Total, 10 roads	7,802	7,297	505			4,418,894	4,245,008	288,928	115,042		566	582		16	
Total inc or dec			505		6.9			173,886		4.1				16	2.8
FAR WESTERN AND PACIFIC ROADS.															
Central Pacific	3,003	3,167		164	5.2	2,100,000	2,139,259		39,259	1.9	699	675	24		3.6
Denver & Rio Grande	1,679	1,160	519		47.5	659,600	512,900	146,700		24.7	393	442		49	11.1
Oregon & Cal.†	240	197	43		21.3	114.174	112.000	2,174		1.9	476	569		93	16.4
Union Pacific	4,332	3,720	612		16.5	2,816,000	2,821,000		5,000	0.2	650	758		108	14.2
Total, 4 roads	9,254	8,244	1.174	164		5,689,774	5,585,159	148,874	44,259		615	677		62	
Total inc. or dec			1,010		12.3			104,615		1.9				62	9.2
GRAND TOTAL:															
Total, 75 roads	60,991	55,053	6,108	172		35,563,965	33,457,454	2,545,647	439,136		583	608		25	
Total inc. or dec			5,936		10.7			2,106,511		6.3				25	4.1

* Includes all lines east of Pittsburgh and Erie.
† Not in table of earnings for the eleven months.
‡ Includes Iron Mountain lines.
§ Includes International & Great Northern.
‖ Includes Utah lines.

the amount assessed against them as the value of their property was too high. They insisted further that the claim for taxes against them was illegal, null and void, because the act providing for their assessment and taxation did not give them a right of notice, a right of hearing, a right of offering testimony to show the true value of their property in the state, and a right of appeal from unjust or illegal taxation. They further allege that the act creating the Commission did not provide as a matter of constitutional right the safeguards against arbitrary assessments, which is guaranteed to other tax-payers, and which they were entitled to as a protection against arbitrary and unjust assessments. They therefore contended that the act was unconstitutional, and that they were not bound by the action of the board. In the lower court judgment went against the companies for the full amount of taxes, interest and costs, and the Court of Appeals now affirms that decision. The amount due the state is as follows: From the Cincinnati, New Orleans & Texas Pacific, $28,632; from the Louisville & Nashville, $73,726, subject to a credit of $57,722; and from the Chesapeake, Ohio & Southwestern railroad, $18,261, subject to a credit of $6,728."

ANNUAL REPORTS.

Mississippi & Tennessee.

This company owns a line from Memphis, Tenn., to Grenada, Miss., 100 miles. Its report is for the year ending Sept. 30.

The earnings for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c
Freight	$380,210	$289,020	I. $91,190	31.5
Passage	130,981	106,441	I. 24,540	23.1
Mail, etc	10,910	11,190	D. 280	0.3
Total	$522,101	$406,651	I. $115,450	28.4
Expenses	261,466	254,159	I. 7,307	2.9
Net earnings	$260,635	$152,492	I. $108,143	70.9
Gross earn. per mile	5,221	4,067	I. 1,154	28.4
Net " " "	2,606	1,525	I. 1,081	70.9
Per cent. of exps	50.80	62 50	D. 11.70	

The movement of cotton over the road was as follows, in bales:

	1882-83.	1881-82.	Increase.	P. c.
Local	76,984	23,729	53,255	224.7
Through	118,261	45,858	72,403	148.1
Total	195,245	69,587	125,658	180.5

The President's report says: "The business of your company the past season has been eminently satisfactory, and with improved connections we see no reason why the business of the present year should not surpass the one just closed. The completion of the Kansas City, Springfield & Memphis Railroad will greatly improve both our through freight and passenger receipts.

"The financial condition of your company has gradually improved for years. The large debt due the state of Mississippi of $65,000 having been paid during the last fiscal year, you have now no doubtful claims against you, and with our improved business, arising from better connections, we see no reason why we should not, from our surplus earnings, soon bring our road-bed and equipment up to the standard of our connections, and place the company in a condition to pay regular dividends to her stockholders."

Wilmington, Columbia & Augusta.

This company owns a line from Wilmington, N. C, to Columbia, S. C., 189 miles. The report is for the year ending Sept. 30.

The equipment consists of 27 locomotives; 16 passenger, 6 postal and 4 baggage and express cars; 389 box and 182 flat cars. Three locomotives, 3 passenger cars and 21 freight cars were added during the year.

The general account is as follows, condensed:

Stock		$1,600,000.00
Bonds		1,600,000.00
Accounts payable		55,538.53
Steel rail account		36,145.59
Profit and loss		97,734.66
Total		$2,749,418.78
Road and equipment	$2,566,557.47	
Stocks owned	74,194.71	
Cash and accounts receivable	108,666.60	
		2,749,418.78

There was no change in stock or bonds during the year. The bonds are all of one issue, bearing 6 per cent. interest.

The traffic reported was as follows:

Train miles:	1882-83.	1881-82.	Inc. or Dec.	P. c.
Passenger	294,376	265,316	I. 29,060	10.9
Freight	240,902	244,091	D. 3,189	1.3
Service and switching	94,010	92,617	I. 1,393	1.5
Total	629,288	602,024	I. 27,264	4.5
Cost of locomotives per mile	13.66 cts.	16.44 cts.	D. 2.78 cts.	16.9
Passengers carried through	31,471	26,733	I. 4,738	17.8
Passengers carried, local	91,380	74,770	I. 16,610	22.1
Total	122,851	101,503	I. 21,348	21.0

The freight traffic was about the same as in the preceding year, although a large part of it was carried at much lower rates.

The earnings for the year were as follow:

	1882-83.	1881-82.	Inc. or Dec.	P.c.
Freight	$4 3.415	$424.737	D. $21.322	5.0
Passage	195,701	169,967	I. 25.734	15.1
Mails, etc	119,483	97,924	I. 21,559	22.0
Total	$718,599	$692,628	I. $25.971	3.6
Expenses	513,307	553,036	D. 39,729	7.2
Net earnings	$205.292	$139,592	I. $65,700	47.1
Gross earn. per mile	3 862	3,665	I. 137	3.6
Net earn. per mile	1,086	738	I. 348	47.1
Per cent. of expenses	71.43	79.85	D. 8.42	

The loss in freight earnings was due entirely to decreased rates on local business in South Carolina. The reduction in expenses was largely due to the improved condition of the road.

The income statement for the year is as follows:

Assets, Oct. 1, 1882		$169,299.31
Net earnings for the year		205,291.87
Interest, etc		9,903.42
Total		$384,494.60
Interest	$97,733.88	
Dividends, 6 per cent.	57,600.00	
Sundry accounts	12,538.90	
Atlantic Coast Sleeping Car Ass'n	48,000 00	
Decrease in floating debt	59,955.22	
		$275,828.60
Assets, Sept. 30, 1883		$108,666.60

The sum of $48,000 from the surplus assets was invested in the stock of the Atlantic Coast Line Sleeping Car Association.

During the year 1,000 tons of steel rails and 96,127 new ties were used in renewals. There are still 90 miles of track laid with iron. There were 1.81 miles of new sidings built and 43 miles of main track ballasted.

The report refers at some length to the great reduction of rates ordered by the Railroad Commission of South Carolina, which was submitted to under protest, although it was believed to be much more than the business of the road would warrant.

The Central Railroad of South Carolina, 40 miles, which this company leases jointly with the Northeastern, earned $94,191. The expenses were $62,452, and the net earnings $31,739, from which the rental of $31,000 was paid, leaving $739 as profit for the year.

Western Maryland.

This company owns a line from Baltimore to Williamsport, Md., 90 miles, with a branch to Emmittsburg, Md., 7 miles. It also controls and operates the Baltimore & Cumberland Valley road, from Edgemont, Md., to Shippensburg, Pa., 34 miles, making a total of 131 miles worked. The statements given below are from the President's report for the year ending September 30, as presented at the recent annual meeting.

The road is chiefly owned by the city of Baltimore, which

has endorsed a large part of the bonded debt, and has made the company large advances.

The traffic for the year was as follows:

	1882-83.	1881-82.	Inc. or Dec.	P.c
Train-miles	843,537	717,470 I.	126,067	17.6
Passengers carried	669,946	587,738 I.	82,208	14 0
Passenger-miles	16,201,680	13,401,848 I.	2,779,832	20.4
Tons freight carried	307,139	225 090 I.	81,449	36.0
Ton-miles	12,876,711	9,172,272 I.	3,704,439	40.4
Av. rate:				
Per passenger-mile	1.60 cts.	1.69 cts. D.	0.09 cts.	5.3
Per ton-mile	2.62 "	2.88 " D.	0.26 "	9.0

The passengers were classified as follows: Full fare, 277,763; two-thirds fare (clergymen), 4,245; half-fare (children), 9,615; commutation and mileage, 138,941; and excursionists, 239,382. Total, 669,946.

The earnings and expenses for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P.c.
Passengers	$259,740	$227,040 I.	$32,700	14.4
Freight	348,996	273,546 I.	75,450	29.1
Milk and market	29,590	27,254 I.	2,336	8.6
Mail, etc	15,838	12,308 I.	3,530	28.7
Total	$654,164	$540,148 I.	$114,016	21.1
Expenses	309,989	304,491 I.	35,498	9.7
Net earnings	$254,175	$175,657 I.	$78,518	44.6
Gross earnings per mile	4,994	4,123 I.	871	21.1
Net " " "	1,940	1,341 I.	599	44.6
Per cent. of expenses	61.15	66.94 D.	5.79	....

The rental of Hillen station in Baltimore is included in expenses. The expenditures for betterments of the property were $83,448 during the year.

The President's report says: "The enlargement of depot and yard facilities at Hillen station, referred to in the last report as having been begun, was completed April 1, and the additional facilities thus provided have enabled the company to accommodate a much larger business than would otherwise have been possible, and still there is now ample provision for a much greater expansion. Neither could the business have been increased to the extent it has without the improvement loan made by the city of Baltimore to the company, as the portion so far applied has nearly doubled the equipment, has extended the steel track to the Blue Ridge and has substituted the most approved type of iron for several of the most important wooden bridges.

"As the company is now paying interest upon this, and upon both of the Hillen station loans, while its ability to do so is daily increasing, the wisdom of extending this aid will not be questioned by any who understand the true interests of the city.

"The company is now paying interest upon $3,021,572 of its indebtedness, and unless the making of provision for business, that must soon be derived from new sources, should require expenditures of net revenue, otherwise available, it will at an early day be able to assume the payment of interest upon a still larger sum."

Wilmington & Weldon.

This company owns a line from Weldon, N. C., to Wilmington, 161.25 miles, with branches from Rocky Mount to Tarboro, 17.75 miles, and from Halifax to Scotland Neck, 19 miles, making 198 miles in all. The Scotland Neck Branch was not completed until Oct. 1, 1882. The report is for the year ending Sept. 30.

The equipment consists of 28 locomotives; 17 passenger, 3 combination, 3 postal and 5 express and baggage cars; 271 box, 10 stock, 135 flat and 9 caboose cars; 1 pay car, 1 wrecking car and 2 bridge cars. Additions during the year were 2 locomotives and 2 caboose cars.

The general account is as follows, condensed:

Stock		$2,082,400.00
Funded debt		1,157,400.00
Accounts and balances		49 545.66
Steel rail account		41,639.46
Profit and loss		540,522.24
Total		$3,871,507.36
Road and equipment	$3,428,378.25	
Stocks and bonds	49,6 0 00	
Cash and accounts receivable	393,529.11	
		$3,871,507.36

The stock was not changed in amount during the year. The bonded debt is also unchanged; it consists of $936,000 new 7 per cent bonds and $221,400 sterling 7 per cent. bonds. In addition to this the company holds $462,000 bonds unsold.

The traffic reported is as follows:

	1882-83.	1881-82.	Inc. or Dec.	P.c.
Train miles:				
Passenger	318,248	302 125 I.	16.123	5.4
Freight	248 063	246,529 I.	1,534	0 6
Service and switching	69,010	66,924 I.	1,086	1.6
Total	634,321	615,578 I.	18,743	3.0
Cost of loco. service per mile	12.04cts.	13.11cts.	D. 1.07cts	8.2
Pssengers carried, through	34,797	32.874 I.	1.923	5 8
" " local	138,327	132,382 I.	5,945	4.5
Totel passengers	173,124	165,256 I.	7,868	4.7

There was an increase in local freight traffic, but a decrease in through freight.

The earnings for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P.c.
Freight	$426,133	$429,937	D. $3,804	0.8
Passage	263,241	251,831	I. 11,410	4.5
Mails, etc	108.055	102,022	I. 6,033	5.9
Total	$797,429	$783,790	I. $13,639	1.7
Expenses	601,549	574,318	I. 27.231	4.7
Net earnings	$195,880	$209,472	D. $13,592	6.5
Gross earn pr mile	4,027	4,379	D. 352	8.1
Net " "	989	1,170	D. 181	15.5
Per cent. of exps.	75 44	73.27	I. 2.17	....

The gross earnings were larger than ever before. Expenses were increased by the purchase of new engines, the completion of the Wilmington shops and other improvements of the road charged to operating.

The income statement is as follows:

Balance, Oct. 1, 1882		$463,507.97
Net earnings		195,879.65
Interest and miscellaneous		20,673.70
Total		$680,061.32
Interest	$80.641.25	
Dividends, 6 per cent	124,944.00	
Sundry accounts	20,416 12	
Atlantic Coast Line Sleeping Car Ass'n	39,6 0.00	
Decrease in floating debt	20,930.84	
	286 532.21	
Balance, Sept. 30, 1883		$393,529.11

During the year 1,000 tons of steel rails and 81,770 new ties were used in renewals. There were 3.88 miles of new sidings built and many improvements made on the road. There are now 50 miles of iron track remaining.

The new shops at Wilmington are completed, and have been of great advantage to the road. Three new passenger cars have been nearly finished there.

The report of President R. R. Bridgers says: "The track has been very much improved, and the improvement will be continued by pressing forward the work of ballasting, for which we have very fine material. The improved condition of the track and rolling stock (which compares favorably with any in the South) is due in the main to the fact that the stockholders have done without dividends a great part of the time for the past 18 years, and have put the net earnings to the improvement of the property and betterments, instead of dividends. While it was hard on the shareholders at the time, the wisdom of this policy stands verified. Had not this been done, in our hard competition for business, with reduced rates, the receipts of the road, instead of gradually increasing, would have diminished. A greater part of the business of this company is dependent on agricultural and forest products, and, with these, varies from year to year, according to their variations.

"The surveys of the several lines from Wilson to Florence; Wilson to the Wilmington, Columbia & Augusta Railroad crossing of the Pee Dee River; from Fayetteville to Goldsboro; Goldsboro to Greenville; Wilson to Greenville; and Greenville to Washington, have all been completed, and the necessary information has been procured to enable the stockholders to take such action in the premises as they may deem proper."

RAILROAD EARNINGS, ELEVEN MONTHS ENDING NOVEMBER 30.

NAME OF ROAD.	MILEAGE. 1883.	1882	Inc.	Dec.	P. c.	EARNINGS. 1883.	1882.	Inc.	Dec.	P. c.	EARNINGS PER MILE. 1883.	1882.	Inc.	Dec.	P.c.
EASTERN ROADS.															
Eastern	284	284	....	...	..	$ 3,363,656	$ 3,164,449	$ 199.207	.....	6.3	$ 11.844	$ 11,142	702	....	6.3
Grand Trunk	2,319	2,253	66	....	2.9	16,404,525	15,419,222	987.303	....	6.5	7,075	6,844	231	....	3.4
Long Island	354	347	7	....	2.0	2,535,852	2,322,486	213,366	.....	9.2	7,163	6,693	470	....	7.1
Pennsylvania*	2,060	1,961	99	....	5.0	47,242,738	44,922,661	2,320.077	.....	5.2	22,9 3	22,908	25	...	0.1
West Jersey	186	173	13	....	7.6	1 152,188	1,046,183	106,005	.....	10.1	6,195	6,047	148	...	2 5
Total 6 roads	5,203	5,018	185	....	....	70,700,9 9	63,875,001	3,825,958	.....	....	13,588	13.327	261	....	....
Total inc. or dec.	.....	.....	185	....	3.7	.....	.....	3,825,958	.....	5.7	.....	.....	....	....	2.0
SOUTHERN ROADS.															
Ala. Gt. Southern	290	290	....	....	....	952,392	761,973	190.419	.....	25.0	3,284	2,628	656	....	25.0
Ches. & Ohio	517	480	37	....	7.7	3,590,363	3,081,621	508,742	.....	16 5	6,945	6,420	525	....	8.2
El.z., Lex. & B. S	130	130	....	....	....	664,025	482,229	181,795	.....	37 7	5,108	3,710	1,3 8	....	37.7
Cin., N. O. & Tex. P	333	336	....	....	....	2,364,047	2,358,321	5,724	.....	0.2	7,036	7,019	17	....	0.2
East Tenn., Va. & Ga.	1,078	901	177	....	19.6	3,772,484	3,010,015	762,469	.....	25.4	3,500	3,333	167	....	5.0
Mem. & Charlest.	292	292	....	....	....	1,167,174	982,932	184,242	.....	18.8	3,998	3,366	632	....	18.8
Fla. Cen. & West	234	234	....	....	....	388,878	368,847	19,731	.....	5.4	1,660	1,575	85	....	5.4
Fla. Transit & Pen.	243	215	28	....	13.1	437,713	374,806	62,907	.....	25.3	1,925	1,743	182	....	10.4
Il. Central, So. Div	578	578	....	....	....	3,821,290	3,250,722	570,568	.....	17.6	6,611	5,624	987	....	17 6
Kentucky Central	191	150	41	....	27.3	770,193	665,621	104,572	.....	15.7	4,032	4,437	....	405	9.2
Louisville & Nash.	2,053	2,028	25	....	1.2	12,864,835	11,447,150	1,417,685	.....	12.4	6,266	5,645	621	....	11.0
Mobile & Ohio	528	528	....	....	....	1,968,396	1,878,444	89,952	.....	4 8	3,728	3,558	170	....	4.8
Nash., Chat. & St. L.	554	539	15	....	2.0	2,118,894	1,952,181	163,713	.....	8 5	3,825	3,622	203	....	5.3
Norfolk & Western	472	428	44	....	10.3	2,530,024	2,204,982	375,042	.....	17.0	5,497	5,153	345	....	6.6
Rich. & Danville	757	757	....	....	....	3,510,512	3,340,984	169.5 8	.....	5.1	4,637	4,413	224	....	5.1
Char., Col. & Aug.	343	327	16	....	4.9	750,443	677,709	72,737	.....	10.7	2,188	2,073	115	....	5.5
Va. Midland	352	352	....	....	....	1,560,312	1,381,352	178,960	.....	12 8	4,433	3,924	509	....	12.8
Western N. C	191	178	13	....	7.2	348,243	223,847	124,396	.....	55.6	1,823	1,258	565	....	44.8
Shenandoah Valley	249	240	9	....	3.8	786,767	415,699	371,068	.....	89 2	3,160	1,732	1,428	....	82 5
South Carolina	244	243	1	....	0.4	1,193,101	1,164,736	33,365	.....	2.8	4,910	4,793	117	..	2.4
Vicks. & Meridian	142	142	....	....	....	463,167	414,505	48,662	.....	11.7	3,262	2,919	343	...	11.7
Total, 21 roads	9,774	9,368	406	....	....	46,107,763	40,438,474	5,669,29	.....	....	4,717	4,317	400	....	....
Total inc. or dec.	.....	.....	406	....	4.3	.....	.....	5,669,290	.....	14.0	.....	.....	400	....	9.3
CENTRAL GROUP.															
Chi. & Eastern Ill.	252	252	....	....	....	1,516,282	1,644,725	.....	128,443	7.9	6,017	6,527	....	510	7.9
Chi. & Gd. Trunk	335	335	....	....	....	2,701,741	2,044,526	657,215	.....	32 3	8,065	6,103	1,962	....	32.3
Cin., Ind., St L. & Chi	342	342	....	....	....	2,309,768	2,385,539	.....	75,771	3.2	6,754	6,973	....	221	3.2
Cin., Wash. & Balt.	284	284	....	....	....	1,715,209	1,622 981	92,228	.....	5.7	6 039	5.715	324	....	5.7
Cleve., Akron & Col.	144	144	....	....	....	490,046	466,291	23,755	.....	5 1	3,403	3 238	165	....	5.1
Det., Lan. & No	226	226	....	....	....	1.483,544	1.469.148	14,396	.....	0.9	6 564	6.501	63	....	0.9
Ev. & Terre Haute	146	146	....	....	....	663,918	790,248	.....	126,330	15.7	4,547	5,413	....	866	15.7
Flint & Pere Marq.	348	346	2	....	0.6	2,344,150	1.956,781	387,369	.....	19.9	6,771	5,655	1,116	....	19.1
Ill. Central, Ill. lines	926	919	7	....	0.7	6,214,351	6,387,017	.....	172,666	2.7	6,711	6 930	....	239	3.4
Ind., Bloom. & West	695	619	76	....	12.3	2,724,721	2,433,805	290,916	.....	11.9	3,920	3,932	....	12	0.3
Ohio Central	274	232	42	....	18.1	999,692	964,683	35,009	.....	3.6	3,649	4,158	....	509	12.1
Ohio Southern	138	134	4	....	3.0	381,162	346.708	34,454	.....	9.9	2,762	2,587	175	....	6.7
Peoria, Dec & Ev.	254	254	....	....	....	658,308	707,874	.....	49,568	6.9	2,592	2,787	....	195	6.9
St. L., Alton & T. H.:															
Main Line	195	195	....	...	....	1,326,777	1,331,410	.....	4,633	0.3	6,804	6,828	....	24	0 3
Belleville Line	121	121	....	...	....	753,838	800,105	.....	46,267	5.8	6,240	6,612	....	382	5.8
St. L. & Cairo	152	152	....	....	....	360,387	345,465	14,922	.....	4.3	2,371	2,273	98	...	4.3
Tol., Cin. & St. L.	712	495	217	....	43.8	1,057,297	779,922	277,375	.....	35.6	1,485	1,573	....	87	5 6
Wabash, St. L. & P	3,520	3,370	150	....	4.5	15,390,177	15,406,405	.....	16,228	0.1	4,372	4,572	....	200	4.4
Total, 18 roads	9,064	8,566	498	....	....	43,001,366	41,883,633	1,827,619	619,906	....	4,754	4,890	....	136	....
Total inc. or Dec.	.....	.....	498	....	5.8	.....	.....	1,207,733	.....	2.9	.....	.....	....	136	2.8
NORTHWESTERN ROADS.															
Bur., Ced Rap. & No.	714	649	65	....	10.0	2,585,563	2,554,619	30,944	.....	1.2	3,621	3,936	....	315	8 1
Central Iowa	359	290	69	....	23.8	1,188,866	1,062,929	125,937	.....	11.9	3,312	3,665	....	353	9.5
Chi & Alton	850	850	....	....	....	8,003,824	7.514,430	489,394	.....	6.5	9,416	8,841	575	....	6.5
Chi., Mil. & St. P	4,549	4,290	259	....	6 0	21,569,000	18,422,011	3,086,989	.....	16.2	4 684	4,294	390	....	9.1
Chi. & N. W.	3,643	3,287	356	....	10 8	23,168,105	22,150.736	1,017,369	.....	4 6	6 300	6,739	..	379	5.7
Chi., St. P. M. & O.	1,235	1,030	205	....	19 9	5,030,887	4,597,254	433,633	.....	9.4	4,074	4,463	....	389	8.7
Des M. & Ft. Dodge	138	99	39	....	39.4	310,219	318,758	.....	8,539	2.7	2,248	3,220	...	97	30 3
Green Bay, W. & St. P	220	220	....	....	....	376,117	355 389	20.728	.....	5.8	1,710	1,615	95	....	5.8
Ill. Cent., Iowa lines	402	402	....	....	....	1,821,373	1,788,652	32,721	.....	1.8	4,531	4.449	82	....	1.8
Marquette, H. & O.	99	92	7	...	7.6	887,341	1,267,016	.....	379,675	29.9	8 963	13,772	...	4,809	34.9
Mil., L. S. & W.	325	279	46	....	16 8	944,008	793,268	150,740	.....	19.0	2,905	2,845	62	...	2.2
Total, 11 roads	12,534	11,488	1,046	....	....	65,825,303	60,825,062	5,388,455	388,214	....	5,252	5,295	....	43	....
Total inc. or dec.	.....	.....	1,046	....	9.1	.....	.....	5,000,241	.....	8.2	.....	.....	....	43	0.8
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	1,444	657	787	....	119.6	4,955,531	2,305,245	2,650,186	.....	114.8	3,432	3,509	....	77	2.2
Northern Pacific	1,879	1,173	706	...	58.7	9,179,208	6,434,901	2,744,307	.....	42.6	4,880	5.486	....	606	11.1
St. P. & Duluth	204	196	8	....	8.2	1,230.111	1,016,968	213,143	.....	20.9	6 0 0	5,189	841	...	16 2
St. P., Minn. & Man	1,323	964	359	....	37.2	7,695,121	8,011,256	.....	316,135	3.9	5,816	8,310	....	2,494	30.1
Total, 4 roads	4,850	2,990	1,860	...	....	23,059,971	17,768,470	5,607,636	316,135	....	4,753	5,943	....	1.190	....
Total inc. or dec.	.....	.....	1,860	...	62.2	.....	.....	5,291,501	.....	29.8	.....	.....	....	1,190	20.0
SOUTHWESTERN ROADS.															
Gulf, Col. & S. F.	511	363	148	....	41.1	1,928 817	1,387.436	541,351	.....	39.0	3,775	3,822	....	47	1.2
K. C., Ft. S. & Gulf	389	365	24	....	6.6	1,799,314	1,545,201	254,113	.....	16.5	4,625	4,233	392	....	9.3
Little R'k. & Ft. S.	169	168	1	....	0.6	490.384	455,548	34,836	.....	7.7	2,902	2,712	190	....	7.0
Lit. R'k., Miss. R. & T.	173	160	13	....	8.1	361,488	294.792	66,696	.....	22.6	2,090	1,842	248	....	13.5
Mo. Pacific	1,901	1,623	278	....	17.3	15,546,060	14,101.854	1,444. 06	.....	10.2	8,178	8,689	....	511	5.9
Central Branch	388	388	....	....	....	1.367,932	87 .,919	492,013	.....	56.2	3,526	2,258	1,268	....	56 2
Mo., Kan. & Tex§	2,186	2,022	164	....	8.1	10,600,009	9,039,885	1,560.124	.....	17.2	4,849	4,471	378	....	8.5
Tex. & Pacific	1,487	1,305	182	....	13.9	5,745,393	4,599.589	1,145 804	.....	24 9	3,864	3,525	339	....	9.7
St. L. & San Fran.	743	660	83	....	12.6	3,483,592	3,243,386	240,206	.....	7.4	4.689	4,916	....	227	4.7
Total, 9 roads	7,947	7,054	893	....	....	41,322,989	35,543,640	5,779,349	.....	....	5,200	5,039	161	....	....
Total inc. or dec.	.....	.....	893	....	12.7	.....	.....	5,779,349	.....	16.3	.....	.....	161		3.2
FAR WESTERN AND PACIFIC ROADS.															
Central Pacific	2,977	3,021	....	44	1.4	22.777.341	23,642,409	.....	865,068	3.7	7,651	7,826	..	175	2.2
Denver & Rio Gr.	1,548	1,094	454	...	41.5	6,807.050	5,906,190	900.851	.....	15.3	4.397	5.399	....	1.002	18.6
Union Pacific	4,332	3,720	612	....	16.5	27,427,697	27,914,004	.....	486,307	1.7	6,331	7,504	....	1 173	15.6
Total, 3 roads	8,857	7,835	1,066	44	....	57,012,088	57,462,612	900,851	1,351,375	....	6,437	7,334	....	897	....
Total inc. or dec.	.....	.....	1,022	....	13.0	.....	.....	.....	450,524	0.8	.....	.....	....	897	12.2
GRAND TOTAL:															
Total. 72 roads	58,229	52,319	5,954	44	....	347,120,439	320,796,891	28,999.178	2,675,630	....	5,961	6,132	....	171	....
Total inc. or dec.	.....	.....	5,910	....	11.3	.....	.....	26,323,548	.....	8.2	.....	.....	....	171	2.8

* Includes all lines east of Pittsburgh and Erie.
† Not in table for November
‡ Includes Iron Mountain lines.
§ Includes International & Great Northern.
‖ Includes Utah lines.

RAILROAD GAZETTE

Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

The copartnership existing between S. Wright Dunning and M. N. Forney under the firm name of THE RAILROAD GAZETTE was dissolved Oct. 8, 1883, by mutual consent, on which date they sold and transferred all their interest in the business theretofore owned and conducted by them to a corporation organized under the laws of the state of New York, entitled THE RAILROAD GAZETTE, of which S. Wright Dunning, W. H. Boardman and M. N. Forney are directors. This corporation has acquired all the assets and become responsible for all the liabilities of the late firm which it has succeeded.

At the expiration of 1883 Mr. M. N. Forney retired from the position which he has held as an editor of the *Railroad Gazette*. He will continue to contribute to its columns, and his articles will hereafter be signed with his name or initials, but he will not be responsible for its editorial conduct, nor is he employed in its service. His address for the present will be at the office of the *Railroad Gazette*.

DECEMBER 28, 1883.

NOVEMBER EARNINGS.

When we reviewed November earnings two weeks ago we had reports from 52,844 miles of road; now our large table gives them from 75 roads with 60,991 miles. The aggregate then showed a decrease from $532 to $525 in average earnings per mile, or only 1.3 per cent. Now it shows a decrease from $608 to $583, or 4.1, which is a much more important matter. Our table this week has reports from 75 roads. Of these 23 show a decrease in total earnings this year, while no less than 39 have a decrease in earnings per mile. In the aggregate the 75 miles of road show an increase of $2,106,511 (6.3 per cent.) in total earnings, but it is made with an increase of 10.7 per cent. in mileage.

The four roads northwest of St. Paul we have heretofore considered, every one of them suffered a decrease in earnings per mile in November. The St. Paul & Duluth has showed an increase heretofore every month for a long time. Their average decrease in earnings per mile was 18¾ per cent.

From the Far Western roads we have reports from two more than had reported two weeks ago, the Union Pacific and the Oregon & California. The Union Pacific has a very small decrease in total earnings, but a large one in earnings per mile. The Oregon & California has never reported its monthly earnings before. With 43 more miles of road than last year, it earned $2,174 more money, and suffered a decrease of about one-sixth in earnings per mile. Its earnings per mile are quite respectable still, however. The Oregon Transcontinental Company is engaged in making the extension of this road through a very difficult country to meet the Central Pacific's California & Oregon line, and there will probably be very little traffic on the extenson till the connection is made. Altogether the four Far Western roads have a decrease of 9 per cent. in earnings per mile. The Atchison, Topeka & Santa Fe, which has usually reported, does not appear in the list.

Eleven other roads west and northwest of Chicago are in our list, which is but one more than two weeks ago. The Hannibal & St. Joseph, which had reported regularly for many years, has not yet reported for November. In the aggregate the 11 roads have increased their mileage 8.6 per cent., to 12,938 miles, and have increased their earnings 11.7 per cent., to $6,983,260, and the average earnings per mile have increased 2.9 per cent., from $525 to $540, which is doing very well indeed. Only the Central Iowa, the St. Paul & Omaha, and the Marquette & Ontonagon show a decrease in earnings per mile. The decrease of the latter is enormous, from $937 to $592, and of course is due to the falling-off in the demand for the iron ore which affords this road its chief traffic, though lower rates for carrying ore may have had something to do with it. The only one of these roads which has really large earnings per mile is the Chicago & Alton, on which they were $918 last November; the Northwestern, with $620, standing next. The 12 roads west and southwest of St. Louis that report include but one that did not report two weeks ago, and that an insignificant one. The six Missouri Pacific roads report under four heads, so that there are but ten lines in the table, four of which show a decrease in earnings per mile. The Fort Worth & Denver reports a large increase and really respectable earnings per mile for so new a road on the border. The Missouri Pacific (including the Iron Mountain) has much the heaviest earnings of these roads, amounting to $815 per mile last November, against $579 on the Missouri, Kansas & Texas (including the International & Great Northern) which stands next. Altogether, these roads show a decrease of 2¾ per cent. in average earnings per mile. They had been showing gains for about a year before.

We now cross the Mississippi and take the roads north of the Ohio, east of the Mississippi and Chicago and west of Pennsylvania. There are 19 of those reporting for the whole of November, including one that had not reported two weeks ago and excluding one that had reported then for three weeks, so that there is not much to add to what was said then except that ten of the 19 roads in the group show a decrease in total earnings and 13 a decrease in earnings per mile. The only notable gains are by Michigan roads, the Chicago & Grand Trunk and the Flint & Pere Marquette. The unfortunate Toledo, Cincinnati & St. Louis earned only $120 per mile; the Ohio Central only $196. The decrease in profits of the Pennsylvania's system west of Pittsburgh in November and the large decrease in the Lake Shore's earnings since September, shown elsewhere this week, are further indications that traffic is unhealthy in this part of the country. Although with 511 more miles of road the 19 lines made but $43,645 more earnings, and their average earnings per mile decreased 4½ per cent., from $450 to $431. Since the above was written the Cleveland, Columbus, Cincinnati & Indianapolis, has reported a decrease of no less than 18 per cent. in November.

Going now to the roads south of the Ohio and east of the Mississippi we have 21 in our table, against 19 two weeks ago, the additions being the South Carolina, which has suffered the important decrease of 17¾ per cent., and the Southern Division of the Illinois Central, which shows a small increase and earned no less than $923 per mile, which is extraordinary for a Southern road. Next to it stands the Cincinnati, New Orleans & Texas Pacific, with $707 per mile. Of the 19 roads, every one of which usually showed an increase until quite recently, no less than 10 had a decrease in earnings per mile last November; still, in the aggregate their average earnings per mile increased from $499 to $501, there having been large gains on the Illinois Central, the Memphis & Charleston, the Florida Transit, the Western North Carolina and the Shenandoah Valley, and some gain on the very large system of the Louisville & Nashville, the latter more than counterbalancing the aggregate of the decreases.

Two weeks ago but four Eastern roads had reported. Now our table has but six, which is much fewer than usual. The New York & New England, the Northern Central and the Reading, which have usually reported heretofore, are missing from the November table. Of the six roads the Pennsylvania and the West Jersey have a slight decrease in earnings per mile. In the aggregate the six roads, with 5 per cent. more road, made 3.2 per cent. more earnings, and their average earnings per mile decreased from $1,224 to $1,203.

We summarize the results in the several groups as follows:

	1883.	1882.	Inc. or Dec.	P.c.
Northwest of St. Paul..	$2,697,638	$2,080,927 +	$616,711	29.7
Per mile	461	568 —	107	18.8
Far West	5,080,774	5,585,159 +	104,615	1.9
Per mile	615	677 —	62	9.2
West of Chicago	6,983,260	6,254,176 +	729,084	11.7
Per mile	540	525 +	15	2.9
W. and S.W. of St.Louis	4,418,894	4,245,608 +	173,886	4.1
Per mile	566	582 —	16	2.8
North of the Ohio	4,206,705	4,163,060 +	43,645	1.1
Per mile	431	450 —	19	4.2
South of the Ohio	4,947,246	4,715,717 +	231,529	4.9
Per mile	501	499 +	2	0.4
Eastern roads	6,620,448	6,413,407 +	207,041	3.2
Per mile	1,203	1,224 —	21	1.7
Total miles	60,991	55,055	5,936	10.7
Earnings	$35,563,905	$33,457,454 +	$2,106,511	6.3
Earnings per mile	583	608 —	25	4.1

On the whole this is the worst showing made by the railroads in any month of 1883. For many roads this was a time of large earnings in the month compared with, however.

Below we give the November earnings per mile for many roads for the last six years:

	1878.	1879.	1880.	1881.	1882.	1883.
Ala. Gt. Southern	....	$171	$211	$270	$338	$370
Bur., C. R. & No.	$298	341	385	355	404	432
Central Branch	....	....	...	208	332	411
Central Iowa	373	...	507	436	367	357
Central Pacific	705	633	898	828	675	699
Chesapeake & Ohio	....	....	508	529	582	648
Chicago & Alton	589	716	829	794	882	918
Chic. & East. Ill	473	556	570	593	642	568
Chic. & N. W	657	695	682	671	610	620
Chic., Mil & St. P.	468	504	409	397	473	511
Chic., St. P., Minn. & O.	....	401	416	409	475	446
Cin., Ind., St. L. & Chi.	585	720	697	617	653	622
Cin., N. O. & Texas Pac.	....	....	....	672	723	707
Cleve., Akron & Col.	220	215	248	264	305	286
Denver & Rio Grande	351	387	741	542	442	398
Des Moines & Ft. Dodge	....	206	369	424	232	247
Det., Lansing & North	....	446	512	540	621	583
Eastern	680	767	851	961	942	999
E. Tenn., Va. & Ga.	364	....	332	318	400	375
Evansville & T. H.	....	....	....	355	422	395
Flint & Pere Marquette	349	407	484	523	536	648
Green Bay, W. & St. P.	....	....	...	190	201	217
Gulf, Col. & S. F.	....	....	403	411	564	442
Ill. Cent. in Illinois	583	575	661	624	635	657
Ill. Cent. in Iowa	318	350	436	409	439	480
Ind., Bloom. & West	442	435	383	361	370	340
Little Rock & Ft. S.	....	....	....	389	547	405
L. R., Miss. R. & T.	....	....	....	205	259	289
Long Island	....	....	...	422	481	509
Louisville & Nash.	658	623	518	526	592	613
Marq., H. & Ontonagon	..	329	403	751	937	592
Mil., L. S. & W.	..	....	192	221	257	274
Mo., Kan. & Texas	....	....	....	408	538	579
Mobile & Ohio	612	611	497	520	571	528
Nash., Chat. & St. L.	450	384	389	437	376	371
Norfolk & Western	411	420	488	535	610	539
Northern Pacific	....	327	417	489	529	516
Ohio Central	....	....	....	355	446	337
Ohio Southern	....	....	....	238	264	196
Pennsylvania	1,077	1,073	1,893	1,995	2,209	2,161
Peoria, Dec. & Ev.	....	124	193	222	211	239
Rich. & Danville	339	380	445	493	479	480
St. Louis, A. & T. H.:						
Main Line	392	518	599	541	797	639
Belleville Line	722	739	596	531	602	606
St. Louis & Cairo	130	155	271	248	238	223
St. L. & San Fran.	363	411	480	441	502	530
St. Paul & Duluth	349	325	193	447	658	637
St. P., Minn. & Mann.	...	378	458	587	863	626
South Carolina	483	518	475	553	624	505
Texas & Pacific	630	651	568	377	439	411
Toledo, Cin. & St. L.	....	....	134	149	152	120
Union Pacific	....	647	726	746	758	650
Virginia Midland	....	....	....	340	389	418
Vicks. & Meridian	....	....	....	413	420	412
Wabash, St. L. & Pacific	....	399	456	407	445	443
West Jersey	302	320	....	....	441	431

There is a good deal of encouragement and some discouragement to be had from this table. It is for instance very encouraging to find that several roads, including some that have increased their mileage, had larger earnings per mile this year in November than in any other of the six. The roads that make this good showing are the Alabama Great Southern, the Burlington, Cedar Rapids & Northern, the Chesapeake & Ohio, the Chicago & Alton, the Milwaukee & St. Paul, the Eastern, the Flint & Pere Marquette, the Iowa lines of the Illinois Central, the Milwaukee, Lake Shore & Western, the Peoria, Decatur & Evansville and the Flint & Pere Marquette, besides four lines which have reported for only three years. Against these we have to put the six roads, on the average much less important, that report smaller earnings per mile in November of 1883 than in previous years, namely: the Central Iowa, the Indiana, Bloomington & Western, the Nashville & Chattanooga, the Ohio Central, the Ohio Southern, and the Toledo, Cincinnati & St. Louis. It is also interesting to note that on the St. Paul & Omaha, the Cleveland, Akron & Columbus, the Detroit, Lansing & Northern, the East Tennessee, the Gulf, Colorado & Sante Fe, the Norfolk & Western, the Northern Pacific, the Pennsylvania, the Terre Haute Main Line, the St. Paul & Duluth, the Manitoba, the Cincinnati Southern, and the Evansville & Terre Haute, the earnings per mile, though less in 1883 than in 1882, were larger than in any November previous to 1882. Even the Denver & Rio Grande, whose earnings per mile were 46 per cent. less than in 1880, earned more than in any year previous to 1880, and portions of it had been in operation for seven or eight

years then. Though earnings have fallen off largely from last year, we are not justified in concluding that they are very poor if they were phenomenally large last year, as was the case on many roads in the fall months.

THE NIAGARA FALLS CANTILEVER BRIDGE.

This new bridge, designed to connect the Canada Southern Division of the Michigan Central Railroad with the New York Central, was publicly tested Dec. 20 last, and was opened for traffic Jan. 1. As the contract for the bridge was not let until April 11 last, the bridge has been constructed in a very short time. The builders, the Central Bridge Works, of Buffalo, may be congratulated on having built and completed within the contract time a double-track rigid railroad bridge of 495 ft. span on possibly the best known and most visited site in America.

As this bridge has excited considerable interest on account of the cantilever principle on which it is built it may be well briefly to describe what constitutes a cantilever bridge. A cantilever is simply a girder supported at or near its centre instead of at its ends. It is therefore liable to tilt if unequally loaded, and this danger is guarded against by so loading one end that under no circumstances can it tend to rise, and then anchoring the other end to a suitable abutment. We then have a girder standing on a pier, and projecting on one side to a shore abutment, and on the other toward the centre of the chasm or river to be bridged. A similar cantilever on the other side leaves a space over the centre of the stream which is spanned by an ordinary girder, resting, however, on the ends of the cantilevers instead of on piers. A cantilever bridge thus resembles to some extent a continuous girder where the strains on the top and bottom chords are greatest over the piers and vanish at the points of contrary flexure. In a cantilever bridge the chords are cut at this point so that no tensile or compressive strain is transmitted, and the centre portion of the span simply rests on, or is suspended from, the cantilevers proper.

The cantilever bridge is peculiarly suitable for such a site as the Niagara River, where false work cannot be used for the centre span on account of the violent current produced by the narrow channel in which the river is confined.

While the cantilever principle on which the bridge is built has been well known for many years, it has been but little used in permanent structures, though the principle of building out from a pier in erecting bridges, where false work was impracticable, has been used in many instances, notably in erecting the St. Louis Bridge. The Kentucky River Bridge on the Cincinnati Southern, designed by Mr. Shaler Smith, was also built out from the piers, panel by panel, but is not, strictly speaking, a cantilever bridge, though in many points it resembles the bridge just opened. Built as a continuous girder, it was divided or hinged after erection at two points, but these were situated in the side spans instead of in the centre, and therefore the centre portion virtually forms a continuous girder, with cantilever ends resting on two piers, the space between the ends of the cantilevers and the abutments being spanned by girders of 300 ft. span. In the Niagara Falls Bridge the cantilevers rest on piers, and are tied down to the abutments, while but one independent girder is used, of only 120 ft. span, across the centre of the river.

A railroad bridge on the cantilever principle has lately been built at Minneapolis, but the track is carried on the bottom chord, which is therefore horizontal, and the top chords are inclined so as to make the cantilever deepest over the pier.

The Frazer River Bridge, on the Canadian Pacific, is another well-known example of the cantilever bridge, and was designed by the Engineer of the Niagara Bridge, Mr. C. C. Schneider. This bridge is of 315 ft. span.

The enforced enormous spans (1,700 ft.) of the Forth Bridge on the North British Railway, induced the Engineer, Mr. B. Baker to carefully investigate the question, and he found that the cantilever principle was the most economical both in weight, cost, and time required for erection. This is certainly borne out by a comparison between the new bridge at Niagara and Roebling's stiffened suspension bridge, situated 300 ft. lower down the stream. The latter bridge took three years to erect, carries only a single track, and undulates considerably under a train moving at a walking pace. The cantilever bridge, though double-track and rigid enough to permit the passage of a train at 30 miles an hour, would probably cost one-third less at present prices.

The opinion of leading engineers in regard to the advantages of cantilevers has greatly changed within the last few years, as is shown by the following extract from a paper read before a learned society in 1878 by one of our leading bridge constructors:

"The cantilever, with connecting span, will never, under any circumstances, be as economical of metal as the stiffened suspension bridge. It shares with it the defect of having its stability dependent upon anchorage built in masonry and practically inaccessible. Its continuity being cut in the centre, it has to be very wide to resist wind pressures, which in long spans become an important factor in modifying the shape of the structure. No large cantilevers have yet been built, and their success on an extensive scale is problematical."

It appears somewhat paradoxical that a bridge can be improved by cutting its chords at two points comparatively near the centre of the span, but such is the case. A girder which is continuous over two or more spans, as is well known, can on paper be made lighter than a series of independent girders, but in practice the alterations in the length of the girders and height of the piers by variations in temperature may materially change the character of the strains upon the bridge. Taking, for instance, a continuous girder similarly situated to the Niagara Falls or Kentucky River bridges, the ends resting on rocky bluffs, and the intermediate supports being lofty metallic piers, it is evident that the expansion of the piers tends to lift the whole bridge, and that if the expansion be sufficient the bridge would rest wholly on the piers, and the shore ends overhang the abutments without touching them. This might never actually occur, but the tendency would be in that direction. The strains would thus be materially altered, and the point of contrary flexure in the shore spans would, as the expansion of the piers went on, gradually move toward the abutments until it disappeared as the ends of the bridge were lifted clear. Similarly contraction of the piers in very cold weather, or a settlement of the foundations, would tend to throw more of the weight on the abutments and less on the piers. In this case also the strains and the position of the points of contrary flexure would also be materially altered. In a cantilever the points of contrary flexure are irrevocably fixed by the cutting of the top and bottom chords, and as the bridge then virtually consists of girders hinged to one another and the piers, no alteration in the height of the latter can throw any undue strain upon the bridge. The adoption of the cantilever system thus gives some security that the changes of temperatures will not have any marked effect upon the character and amount of the strains, while it will be seen that it is at a normal temperature no weaker than a similar continuous girder bridge, from which it differs only in having the chords divided at points where tension and compression vanish.

The cantilever bridge for very large spans is even more economical of material than a suspension bridge with a stiffening girder for carrying a moving load. In a large span the principal weight to be carried is the bridge itself, and in a suspension bridge this weight is pretty evenly distributed over the whole bridge, while in a cantilever bridge it is more concentrated toward the piers where it acts with the least leverage, and consequently the weight of the bridge, as a whole, has a less bending moment.

As the piers are founded near the edge of what is probably the most furious rapid in the world, the question at once suggests itself, Is there any probability of the foundation of the piers being undermined? Though a serious cave-in of rock occurs on the American side below the Suspension Bridge, the slopes above water are tolerably permanent, as is shown first by the very narrowness of the stream, notwithstanding the enormous erosive forces constantly at work, tending to widen and deepen the channel. Trees over 2 ft. in diameter, found growing on the slopes, show no sign of any movement having occurred in their lifetime of possibly 100 years. It would therefore appear that the channel having been cut to its present form by the enormous impact of the falling water itself, when the falls were lower down, is comparatively unaffected by the less violent action which the rapids now bring against it.

It is probable that the bed of the river is paved with blocks of limestone broken off from the upper rock as the lower and softer strata are undermined by the falls. These masses of rock have been wedged together by the force of the cataract and shield the softer underlying shale from further erosion. The piers are founded on similar blocks, the real bed rock being probably 100 feet lower down, and it is doubtful if any artificial pier could equal in stability the natural masonry thus provided. The area of the foundation of the bridge piers is so large and well distributed that the weight of the bridge can exert but little disturbing influence upon the foundation. It has already been pointed out in this article that as a cantilever bridge consists virtually of three girders hinged to one another and the piers, any settlement of the latter will not throw undue strains upon the girders.

The testing trains, one for each track, were each composed of ten eight-wheeled American type locomotives and twelve flat cars loaded with dirt. Four of the locomotives were massed together in the centre of the train, and the remaining engines were separated by the loaded cars. The trains entered on the bridge from the Canadian side and advanced at a slow pace, halting at different positions on the bridge, while the deflections were being taken by a committee of engineers appointed for the purpose. The leading engines of the trains at last reached the abutment on the American side, the trains stretching the whole length of the bridge and the eight engines standing on the centre. The stability of the bridge being thus satisfactorily demonstrated, the twenty locomotives, or their engineers, gave vent to their feelings by a prolonged howl of triumph, the vibrations of which were plainly felt by persons standing at a considerable distance from the bridge.

The test load weighed 3,760,000 lbs., and was almost exactly equal to two tons per foot run for the double track. The greatest deflection occurred when the load completely covered the bridge, when the centre sank 6¾ in. below an imaginary horizontal line stretched between the abutments. In a bridge of this class this deflection should be considered as having some relation not only to the clear span, 495 ft., but also to the entire length of the bridge, 910 ft.

From data kindly furnished by Mr. C. C. Schneider, the Chief Engineer of the new structure, the details and dimensions of this interesting bridge are given elsewhere in these columns.

The weight of the iron work in the bridge itself, excluding approaches, is about 2,500 tons, and including platforms, handrailing, permanent way, etc., the total weight of the bridge is nearly 3,000 tons.

It is very gratifying to know that the bridge was completed without any accident to life or limb, a fact which bears practical testimony to the care bestowed by the builders in selecting their staff and providing for their safety.

THE LAKE SHORE AND THE MICHIGAN CENTRAL STATEMENTS.

In declaring dividends last week the directors of the Lake Shore and the Michigan Central companies made the usual statement of the gross and net earnings, working expenses, prior charges, and surplus for the year 1883, the amounts of course being partly estimated, as the year had not yet expired, but being very near the actual results, doubtless. These reports are the first we have from immediate connections of the trunk lines west of Buffalo, and have a special interest because they give some indication of what the course of business may have been on parallel roads further south at a time when two new lines were in operation from Chicago eastward.

THE LAKE SHORE.

The Lake Shore statement shows for 1883 an increase of $324,361 (1¼ per cent.) in gross earnings, and a decrease of $82,807 in working expenses, resulting in an increase of $407,168 (5⅝ per cent.) in net earnings. The prior charges (interest, rentals, and dividends on guaranteed stock) meanwhile increased $523,000, due to the interest on the bonds paid for the controlling interest in New York, Chicago & St. Louis stock. Therefore the surplus available for dividends decreased $115,832, to $4,025,000, and was $8.14 per share, against $8.37 in 1882 and $8.02 in 1881.

The statement for the first half of the year made last June enables us to give these items for the last half of the year separately as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earnings	$9,339,344	$10,272,918	—$933,534	9.1
Expenses	5,306,221	5,698,131	— 391,910	6.9
Net earnings	$4,033,163	$4,574,787	—$541,624	11.8
Prior charges	1,750,000	1,500,050	+ 249,950	15.9
Surplus	$2,283,163	$3,064,737	—$781,574	25.5
Per share	$4.62	$6.20	— $1.58	25.5

Thus in the last half of the year the comparison with 1883 is unfavorable, there being a large decrease of gross earnings, which in spite of an important decrease in working expenses caused a large decrease in net earnings, and as the prior charges increased, the surplus available for dividends decreased still more, from $6.20 to $4.58 per share, or 25½ per cent.

But the profit in the last half of 1882 was exceptionally great, and the Lake Shore's profit for the whole year is certainly satisfactory, considering the diversion of traffic by the new Chicago roads and its own increase in fixed charges.

For seven successive years the gross and net earnings

working expenses and earnings per share of the Lake Shore in the last half of the year have been :

	Gross earnings.	Expenses.	Net earnings.	Profit per share.
1877.....	$7,043,993	$4,335,847	$2,708,146	$2.67
1878.....	7,383,674	4,317,027	3,066,647	3.46
1879.....	8,333,010	4,716,003	3,616,407	4.58
1880.....	9,676,461	5,398,721	4,277,770	5.88
1881.....	9,016,455	5,993,265	3,023,200	3.36
1882.....	10,272,918	5,698,131	4,574,787	6.20
1883.....	9,339,384	5,306,221	4,033,163	4.62

The gross earnings in 1883, we see, were exceeded only in 1882 and 1880; the expenses were the smallest for four years, though this has been a time when expenses were increasing generally; the net earnings, like the gross, were exceeded in 1882 and 1880; and the profit per share only in those years, in spite of the increase in the interest account.

The reports of Chicago shipments have shown that this road carried an exceptionally small proportion of the east-bound through freight in the last half of 1883 (about 14 per cent., while its share in 1882 was 21¼ per cent.); in other things it probably fared like the other roads. It must have had a very important local traffic and have suffered little decrease in it to have done so well in the last half-year. It is a question how much of a diversion of its local traffic would have occurred had it not secured control of the Nickel Plate. That purchase would probably be satisfactory enough if it involved nothing more than paying interest on the purchase price; but it is not probable that the Nickel Plate can earn interest on its bonds, and then if the Lake Shore is to keep control a further advance in some shape will be required. An investment which, like the Pittsburgh & Connellsville for many years and the Marietta & Cincinnati also to the Baltimore & Ohio is not a source of income but a cause of further yearly investments of capital that make no present return may be inevitable but is a very painful necessity.

For four successive years, now, the Lake Shore has earned a profit per share of more than $8, and has divided $8, the profits earned being $11.28, $8.02, $8.37 and $8.14 respectively. From 1873 to 1879 the profit per share varied from $2.20 to $7.24, and averaged $4.92.

This road will be affected considerably by anything affecting the coal and iron business, and by the condition of through traffic. It is not probable that its proportion of the through business will be greatly affected by the opening of any new roads now, though part of what the West Shore takes from New York and New England will be diverted from it.

The Lake Shore's report to the New York authorities for the year ending Sept. 30 makes it possible to ascertain its earnings in the last quarter of the year. It seems that in that time it suffered a decrease in gross earnings of $634,885 (11¼ per cent.), which is two-thirds of the decrease for the six months. Nearly the whole of the decrease in expenses was in this last quarter of this year also, so that the decrease in net earnings was but $263,738. The earnings per share in this quarter were $2.71 in 1883, against $3.54 in 1882. The total through shipments in this last quarter of the year were as large as last year, probably, but the Lake Shore did not carry so large a proportion of the freight eastward, though as large a one as in the previous quarter, we think. The smaller roads further south have been making a bad showing recently, but there had been nothing before to show what the condition of things had been on those lines which have a heavy trunk line through traffic.

THE MICHIGAN CENTRAL.

This company now reports earnings and expenses of the system formed by it and the Canada Southern, forming a second system between Buffalo and Chicago, parallel with and north of the Lake Shore. By the union substantially the whole of the great Michigan Central through traffic was transferred to the Canada Southern, which previously had only about half of it. A comparison of the statement made for the united system of 1883 with the aggregates of the two roads in 1882 shows the following results :

	1883.	1882.	Increase.	P. c.
Gross earnings.....	$14,000,000	$12,457,991	$1,542,009	12.5
Expenses.....	9,700,000	9,268,906	431,094	4 6
Net earnings.....	$4,300,000	$3,189,085	$1,110.915	34.8
Interest and rentals	2,475,000	2.480.602	Dec. 5,602	0.2
Surplus.....	$1,825,000	$708,483	$1,116,517	157.7

This is a very satisfactory showing, and indicates that the union has accomplished all that was expected of it. The system is very like the Lake Shore in extent and has the same termini east and west, and might be expected to keep pace with it pretty evenly. But while the Lake Shore had an increase of only $324,361 (1¼ per cent.) in gross earnings, the Michigan Central gained $1,542,009 (12¼ per cent.). There was an increase $431,000 in the expenses of the Michigan Central, while there was a decrease of $32,800 on the Lake Shore; but this left the increase in net earnings $1,110,915 (34¼ per cent.) on the Michigan Central and but $407,168 (5⅛ per cent.) on the Lake Shore.

Thus the Michigan Central system has made a vastly greater improvement than the Lake Shore. The latter, doubtless, suffered more from the diversion of through freight at Chicago, though the Michigan Central suffered much, but the Lake Shore is much affected by the activity of the iron business about Cleveland, and the Michigan Central very little. There is only one year before in the history of the Michigan Central and Canada Southern when their combined net earnings were as large as in 1883, and then (in 1880) they were but $276,336 larger. This exceptionally good showing was doubtless chiefly due to the fact that by the union the whole of the Michigan Central through traffic between Chicago and Buffalo was carried the 520 miles which is the whole length of both roads, while in 1882 a very large part of it (that exchanged with the Great Western) was carried by this company only the 284 miles between Chicago and Detroit.

The increase in the divisible surplus of the systems is no less than 157 per cent., but it is an increase over a year the first half of which left both these roads scarcely enough to cover their fixed charges.

Two-thirds of this surplus by the contract between the roads goes to the Michigan Central and one-third to the Canada Southern. Compared with 1882 this gave them :

	1883.	1882.	Increase.	P. c.
Michigan Central....	$1.216.667	$625,000	$591,667	94.7
Per share.....	$6.49	$3.33	$3.16	94.7
Canada Southern....	$608,333	$227,647	$38 686	167.2
Per share.....	$4.05	$1.52	$2.53	167.2

The Michigan Central gains the most in amount, but the Canada Southern's percentage of gain is much the larger.

It is noticeable that the aggregate fixed charges of these two roads is given as a little less than last year. The contract provided that a considerable addition to rolling stock, some new road and improvements of the Canada Southern should be provided and second-mortgage bonds issued to pay for them. Much of these improvements have been made, but it does not appear that interest on any of the bonds issued to pay for them became due in 1883. The fixed charges of the Michigan Central were decreased during the year, however.

In the last half of the year the earnings, expenses, etc. of the two roads were:

	1883.	1882.	Increase.	P.c.
Gross earnings.....	$7,260,000	$6,889,708	$370,292	5.4
Expense.....	5,109,000	4,795,858	311,142	6.5
Net earnings.....	$2,151.000	$2,093,850	$57,150	2.7
Fixed charges.....	1,265,000	1,240,457	24,543	2.0
Surplus.....	886,000	853,393	32,607	3.8

Thus four-fifths of the increase of gross earnings for the year and nineteen-twentieths of the increase in net earnings were made in the first-half of the year. It is true that there was considerable gain in gross earnings in this last half while the Lake Shore suffered a large decrease; but the Michigan Central expenses increased nearlyas much as its earnings in this first half, and nearly three times as much as in the last half of the year, so that there is scarcely any gain in net earnings in this last half. But it should be remembered that though the union of the two roads was not effected till January, the Michigan Central traffic had been mainly diverted from the Great Western to the Canada Southern for some time before, so that part of the advantage of the union had been attained during part of the last half of 1882. The last half of 1882 was extremely favorable, and to do as well is doing extremely well, as the large decrease on the Lake Shore indicates. The aggregate gross and net earnings and surplus of the two roads in the last half of the year for six successive years have been:

	Gross earnings.	Expenses.	Net earnings.	Surplus.
1878....	$5,187,003	$3,264,634	$1,922.369	$905,771
1879....	5,805 104	3.878,365	1,926,739	920.510
1880....	6,294.529	4,126.071	2,168,458	1,218,148
1881....	6,145,059	5,001.631	1.143,428	*35.811
1882....	6,889,708	4,795,858	2,093,850	853,393
1883....	7,260.000	5,109,000	2,151,000	886,000

* Deficit.

Thus the gross earnings were decidedly larger in 1883 than in the corresponding half of any previous year, but the net earnings were slightly exceeded in 1880, and the divisible surplus, though a trifle larger than in 1882 and immensely larger than in 1881, is a quarter less than in 1880 and less than in 1878 and 1879 also. In these two years last named nearly the whole of the surplus was made by the Michigan Central, which then had 31 per cent. of the Chicago shipments, while it has but 18¾ per cent. now.

NEW THROUGH LINES AND THEIR EFFECT ON EARNINGS.

The total through shipments eastward from Chicago in the month of November were 232,713 tons. In our issue of Dec. 14 we found that the shipments of the month, exclusive of those made at old rates in the last five days of the month (when the advanced rates were in force), had been 200,461 tons, so that it seems that 32,252 tons were shipped at the old rates in these five days, against 14,126 tons at the new rates, which is perhaps about what might be expected. This makes the total shipments for the last nine days of November 81,784 tons, against 76,275 in the corresponding week of last year. The shipments of the nine days this year were at the rate of 63,610 tons per week, which is much more than in the last week of November in any previous year.

The Chicago shipments for successive months since 1878 have been, in tons:

	1879.	1880.	1881.	1882.	1883.
January.....	192,512	163,378	263,872	321,148	257,093
February.....	198,541	166.541	204,331	225,816	223,212
March.....	258,458	318,983	212,021	179,145	287,563
April.....	298,042	186,543	175,417	138.472	147,129
May.....	280,355	125,157	171,432	115,772	141.011
June.....	260,234	223,977	242,463	115,805	123,889
July.....	145,788	160,187	159,253	95,039	113,575
August.....	162,263	169.314	280,608	135,241	165,168
September....	134,141	151.464	265,414	153.234	191.977
October.....	193,976	179,466	258.674	152,871	193,314
November.....	168,274	219,840	216,506	214,295	232,713
11 months...	2,292.584	2,064.850	2,699,991	1,849,838	2,076,674
December....	179,154	244,790	259,326	.....	.....
Year.....	2,471,738	2,309,640	2,889,317	.....	.....

Thus the November shipments were larger this year than ever before, and 8½ per cent. more than last year. The shipments of the eleven months this year were 226,836 tons (12¼ per cent.) more than last year, 553,317 tons (21 per cent.) less than in 1881, 11,824 tons (½ per cent.) more than in 1880, and 215,910 tons (9½ per cent.) less than in 1879. Since 1879 three new roads have entered Chicago and obtained a share of the traffic, the aggregate percentage awarded them being 30 per cent. of the whole. Since 1879, also, the through rates have been considerably reduced, especially in winter. The winter rate is one-fourth lower than in 1879–80, and the summer rate one-sixth lower than in 1880. In the winter of 1879–80 1,000 tons of grain or flour shipped from Chicago to New York brought the five Chicago roads then working their pro rate of $8,000; this winter they get from the same amount of shipments from Chicago their pro rate of $4,200 only, having 30 per cent. less of the traffic and getting 25 per cent less for carrying it. At the rates of 1879-80 the Chicago & Atlantic route would have received $880 and the Nickel Plate route $640 for every thousand tons of grain or flour shipped by any route; at present they get $660 and $480 respectively, unless they cut, when they get less. But in the earlier year the Michigan Central route received $2,480 for every thousand tons shipped by any route; now, $1,125. The changes on the several lines are shown below, the figures being their earnings for every 1,000 tons of grain (or its equivalent in freight bearing higher rates) under the tariff and division of traffic prevailing in the winter of 1879–80 and this winter:

	1879-80.	1883-'84.
Michigan Central.....	$2,480	$1,125
Lake Shore.....	2,080	1,020
Fort Wayne.....	2,000	1,155
Pan-Handle.....	800	480
Baltimore & Ohio.....	640	420
Grand Trunk.....	.....	660
Chicago & Atlantic.....	.....	660
Nickel Plate.....	.....	480
Total.....	$8,000	$6,000

Thus from the same total quantity of Chicago shipments the Michigan Central earns 54⅛ per cent. less, the Lake Shore 51 per cent., the Fort Wayne 42½, the Pan-Handle 40 per cent., and the Baltimore & Ohio 34⅛ per cent. less this winter than in 1879-80.

To give the old roads on the average as much *traffic* as then, the total shipments would need to be increased no less than 43 per cent., as out of every 143 tons the 30 per cent. of the new roads takes 43 tons: but to give them the same *earnings* as in 1879–80 the whole traffic must be again increased one-third, which will be 47 per cent. of the original shipments, making 90 per cent. in all. For every 1,000 tons carried from Chicago in 1879–80 was carried by the five old roads and yielded $8,000 of earnings, while for them to earn $8,000 now *their* shipments must be 1,333⅓ tons, and as these can be but 70 per cent. of the whole, the total shipments must be 1,903⅓ tons.

Probably scarcely any one appreciates the immense effect caused on the value of each road's share of the traffic by the combined influence of the increase of the number of roads and the decline in the rates. People hastily assume that if the new roads get 30 per cent. of the business it will be made up to the old roads by an increase of 30 per cent. in the total traffic, whereas, as we have shown above, it requires an increase of 43 per cent. of the total traffic to make up for a diversion of 30 per cent. of it to the new routes, for these new routes get their proportion of the increase as well as of the old traffic. But the statement, often repeated, that the traffic is sure to increase greatly is not confirmed by the facts shown in the above table. The shipments for the eleven months in 1883, we see, were 9½ per cent. less than in 1879, and 21 per cent. less than in 1881, nearly the same as in 1880, and

show a considerable increase over 1882 only—which bad crops made exceptionally unfavorable. The shipments in last December have been very incompletely reported so far, but they were probably considerably less than those in the corresponding month of 1882. But taking the five years as a whole no tendency toward an increase of the Chicago through shipments eastward can be detected. There is no reason to believe that they can be above the average in 1884, unless a great crop of wheat next summer makes them so in the latter part of the year. It need not be said that an increase of 90 per cent. cannot be looked for many years.

We have made our comparisons, however, not with a full year, or with a period of average rates, but with the winter of 1879-80, a time when rates were higher than they have been since and were unusually well maintained—with a time of exceptional general prosperity such as we cannot reasonably look for now. The summer rates for the last two years have been but one-sixth less than in 1880, and an increase of 20 per cent. in the traffic balances that decrease in the rates, so that while navigation was open 1,714 tons of freight brought the five old railroads as much as they earned from 1,000 tons in 1880. But an increase of 70 per cent. in the Chicago shipments will not come for many years, doubtless, and the old roads must be reconciled to the fact that their through business will bring them a much smaller amount of earnings than in previous years.

The increase in the number of roads, we see, has caused but part of the great decrease in the through earnings of the old roads, the decrease in rates, which they have already become accustomed to, causing the rest. We shall have soon a considerable diversion of traffic from the old Eastern trunk lines, and it will be well to bear in mind that to make up for the business which is diverted the traffic must increase by a much larger percentage than that which the new roads will obtain. Suppose, for instance, that the new Lackawanna and West Shore lines should take 25 per cent. of the New York shipments, leaving 750 out of every 1,000 tons to the old roads. Then not till the total shipments have increased one-third, to 1,333⅓ tons for every 1,000 before the new lines had a share of the traffic, will the old roads have as much as before. If the new roads secured 50 per cent. of the shipments, then the whole traffic would have to increase 100 per cent. to give the old roads the same quantity as formerly.

The New York shipments, it may be said, until last year, or rather until July, 1882, increased much faster than the Chicago shipments eastward, this being one of the effects of a great increase in the manufacture and consumption of merchandise at a time when there was little or no increase in agricultural production. The increase was 12½ per cent. from 1878 to 1879, 22½ from 1879 to 1880, 22 from 1880 to 1881, and 13¾ from 1881 to 1882; but in 1883 the shipments were much less than in 1882, and perhaps 6 per cent. less than in 1881. At present these shipments seem not likely to grow much, for a time.

This fact, that the new lines are opened and take a share of the traffic at a time when it is not growing, makes it all the more important for all parties concerned that rates should be maintained. Should there be a drop of 20 per cent. in the rates while the new roads took 25 per cent. of the traffic, then the same amount of shipments would give the old roads 40 per cent. less earnings, and to recover their old position there would have to be an increase of 66⅔ per cent. in the total traffic.

We have here traced the effect of the multiplication of routes and the reduction of rates on gross earnings alone. But at a time when traffic is not increasing the effect on net earnings will be much more in proportion than on gross earnings. The old roads are equipped with all the appliances for carrying the largest traffic they have ever had to carry. When new lines take part of it and there is no increase in the total, they must therefore have a considerable capital invested in appliances for which there will be no employment for a time. Further, railroad men need not be told that as *additions* to traffic can be carried with comparatively small additions to expenses, *reductions* of traffic do not decrease expenses in anything like the same proportion as the decrease in traffic, and a reduction in rates is, of course, wholly a reduction of net earnings.

Thus though new through lines may not get a very large proportion of the through traffic, and may make very small profits for themselves, their effect on the old roads may be more considerable than at first appears. Some figure out a very small profit for a new competing road, and conclude from this that it can have little effect on the roads with which it competes. But if some one takes a part of what has given one man a full living, though the part taken may not give the newcomer half a living, it still straitens the support of him who previously had the whole.

The Union Pacific Contract with the Iowa Roads at the present writing has been made to include all the Chicago-Council Bluffs lines except the Chicago, Burlington & Quincy, and as a conference with that company is appointed for Thursday of this week, whether it will join or not will probably be known to most of our readers before this paper appears. The contract as originally drawn hardly made it possible for the Burlington to become a party to it, and apparently it was drawn with the intention of excluding it and the Northwestern also, as it required the Iowa roads to deliver *all* their through west-bound freight to the Union Pacific, according to which the Burlington would be unable to ship *any* freight over its own line from the Missouri River to Denver. It is suspected that the agreement was drawn up many months ago, and was originally meant to be kept secret until put into force, and to be with the Rock Island and the St. Paul companies exclusively, which would account for the talk of a contract that the Iowa roads shall not build any road in Nebraska. The Rock Island and the St. Paul could well afford to make such a contract if they were guaranteed the whole of the Union Pacific business, for it would give them the chief advantage to be gained from a great system west of the Missouri without the cost, risk and delay of building one.

But if this was intended, when it leaked out it was probably found that this would be a dangerous contract to execute, and some modifications were made which admitted the Wabash. Last week the Northwestern became a party to the agreement, so far as accepting the divisions of rates and interchanging with the Union Pacific is concerned. It does not, however, become a party to any agreement to exclude anybody from the Union Pacific business. Certain roads having offered to take the Union Pacific traffic on certain terms, it is necessary for it to give as good terms or go without the traffic, just as in every other case.

What the Burlington will do (which perhaps should read "has done" by the time our readers see this) will doubtless depend upon the terms offered it. It may be taken for granted that it will not consent to divide the local traffic of its trans-Missouri system with its competitors in Iowa. It can, and it should, consent to a division of the trans-Missouri competitive traffic with the Union Pacific so that rates may be maintained, and it cannot expect to get a full share of the traffic from the Union Pacific and give nothing in return. It has, we understand, taken all unconsigned freight to the Denver & Rio Grande at Denver, and been a party to rates which have ruined the value of the Utah traffic to the Union Pacific.

Should a compact be made excluding the Burlington, the other Iowa roads would have each 25 per cent. of the Union Pacific traffic, instead of 20 per cent., as previously, but it is difficult to see what the Union Pacific would gain, unless the long contract for a division of rates favorable to it may be considered a gain. Every trouble connected with the Burlington's competition would remain to be settled the same as before. The Burlington would not be less active in getting live stock and Denver business and in taking California freight to the Denver & Rio Grande, but doubtless more so. It would have more to gain by diverting traffic from the Union Pacific, because heretofore it has had a share of the Union Pacific traffic east of the Missouri, and made something on a shipment from Ogden or Denver over the Union Pacific, while by the proposed contract it would make nothing on this. So far as the Union Pacific's ability to "meet cuts" is concerned, the agreement will simply enable it to do promptly what the Iowa roads would have been impelled to do in their own interest without any agreement. They never could be willing to have the Burlington divert freight from the Union Pacific and competing points west of the Mississippi, because when it was diverted from the Union Pacific it was diverted from them also. They had the same motives to prevent the diversion as if they had been a part of the Union Pacific. Under any circumstances, whether the Burlington stands independent of the other Iowa lines or works with them, its relations with the Union Pacific west of the Missouri will have to be the subject of a settlement between the two companies, which may be reached by negotiation now, or by negotiation after a season of competition of greater or less length, causing losses to both and to the other Iowa roads.

The traffic in question is important, but its importance to the Iowa roads is generally exaggerated. Not long ago there was one-third of it for each; very lately but one-fifth for each; the new agreement, if the Burlington is excluded, will only give the other four roads as large a share of the traffic as they have had until very recently, since the Wabash line was opened. Moreover, the rates, at least the passenger rates, are much lower than they were a few years ago. Further, the transcontinental traffic over the Union Pacific is now but a small part of what it was. The Northern Pacific carries substantially all the Oregon and Washington traffic: the Southern Pacific route *via* New Orleans takes nearly *two-thirds* of all the freight from the Eastern states to California; and of course some must go by the Texas & Pacific, the Atchison, Topeka & Santa Fe, the Atlantic & Pacific and the Denver & Rio Grande. This is now doubtless much less important than the Union Pacific local traffic, but it is not generally known how comparatively unimportant it has become, or how very large a part of it has been diverted from the Union Pacific.

Mr. Henry Villard is to submit his resignation of the presidency of the Northern Pacific at the board meeting to-day (Jan. 4), when it will, doubtless, be accepted. It will be remembered that when he resigned the presidencies of the Oregon Transcontinental and the Oregon Navigation companies, about two weeks ago, he announced that he intended to remain President of the Northern Pacific. It is probable that his resignation was requested, though illness may have made him willing to tender it. His magnificent confidence in the enterprises of which he was the head and the not less magnificent confidence in himself with which he inspired others have made him one of the great figures of our time. He perhaps was not too sanguine as to the ultimate results of his enterprises, but he may well have underestimated the time required to produce these results, or the effect of future prospects on the prices of stocks in the money market; and to him and to all investors in such enterprises, a comparatively small difference in the time within which an enterprise becomes remunerative, or in the obstacles which it encounters, or in the temper of investors, is the difference between success and failure. An underestimate of the cost of the Northern Pacific made a difference of many millions in the value of Northern Pacific stock, and Northern Pacific stock is the chief property of the Oregon Transcontinental Company. But even when it was evident that there had been this underestimate, and when a suspicion of the large floating debt had brought down the price of the stock, and it was perfectly certain that this debt would be much larger than the public suspected. Mr. Villard seemed as confident as ever, not simply in the ultimate value of the property, but in higher prices for the stocks in a very short time. His confidence was contagious, and many have been ruined by partaking it, and it does not reconcile them to their misfortune that Mr. Villard, but a few week ago reckoned several times a millionaire, is ruined also. A statement which he made to Transcontinental stockholders last summer it does not seem possible that a sane man, knowing what he knew, could have believed; but he dealt with his own property as if he believed it. When the great fall in Northern Pacific shares had put the Transcontinental Company into great financial straits, it is said that he used the company's and his own resources to make great purchases, hoping to sustain the prices, and prevent losses to the company, which was a desperate thing to do and must have greatly increased losses; but it is to Mr. Villard's eternal honor that he gave up his whole fortune in efforts to make good these losses. We should not have to look far for financiers who in his place would have made more by the fall of his company's stocks than by their rise, and amassed a fortune from the ruin of his associates.

New York through shipments westward since October have been considerably larger this year than last, which the condition of trade in the two periods would hardly lead one to expect. Especially were the shipments large in the first half of December this year, when they were nearly a third more than last year. Possibly this is because rates are not so well maintained as last year, though we should not expect shipments to be much increased by small reductions in rates at this season, unless, indeed, the shippers expected that rates would soon be restored, in which case, doubtless, they would hurry forward as much as possible. It is now many months that rates have been affected by the Lackawanna's entering the field for business. The effect has been that most to be deprecated—namely, the giving of lower rates to some shippers than to others, which is the effect of all secret rates. But by this time it is questionable

whether the rates are as irregular as might be thought. The success of the Lackawanna in diverting a considerable quantity of low-class freight was felt most by the Erie, which in the pool had the largest proportion of this freight; and it did not permit its business to be taken away without an effort to retain it, and for some time it is shrewdly suspected that all the lines have made concessions to retain this freight. If it was expected that these concessions would not last long, then exceptionally large shipments would be made of such freight as sugar to places like Chicago, where immense stocks are sometimes held.

November Accidents.

Our record of train accidents in November, given in full elsewhere, shows for that month a total of 122 accidents, in which 34 persons were killed and 235 injured. It contains accounts of 50 collisions, in which 22 persons were killed and 60 injured; 70 derailments, in which 12 were killed and 175 injured, and two other accidents, in which no one was either killed or hurt.

As compared with November, 1882, there was a decrease of 3 accidents; a decrease of 2 in the number killed, but an increase of 106 in the number injured. The unusual number of injured persons reported was due to a few accidents, in each of which a considerable number were hurt.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear	35
Butting	12
Crossing	2
Passing	1
	—50
DERAILMENTS:	
Broken rail	4
Broken bridge	4
Spreading of rails	4
Broken wheel	6
Broken axle	4
Broken truck	1
Accidental obstruction	7
Cattle	3
Wash-out	3
Land-slide	1
Wind	1
Misplaced switch	7
Bridge floor removed for repairs	1
Rail purposely removed	3
Switch purposely misplaced	3
Malicious obstruction	3
Unexplained	15
	—70
OTHER ACCIDENTS:	
Broken coupling rod	1
Car burned while running	1
	— 2
Total	122

Eight collisions were caused by trains breaking in two; four by mistakes in giving or receiving orders; three by cars blown out of siding; three by misplaced switches; two by cars carelessly left on the main track; two by failures to use signals; two by fog; one each by carelessness in running and by carelessness in putting cars on a siding.

Of the four broken bridges one was partly consumed by fire just before it gave way; the other three were wooden trestle bridges, calling for no especial remark.

Ten accidents—seven derailments and three collisions—were caused by misplaced switch, which do not appear to diminish in number.

Trackmen are again responsible for several accidents, one by leaving rails insecurely spiked, while in another case a very singular accident was caused by bridge-builders neglecting to signal trains properly when they were repairing a bridge.

No less than nine derailments—an extraordinary number—were maliciously caused. Three of these train-wreckers operated by removing rail fastenings, three by misplacing switches, and three by putting obstructions on the rails. The number of these malicious derailments is an exceedingly bad feature of the month.

A general classification of these accidents is as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road	..	11	..	11
Defects of equipment	9	12	1	22
Negligence in operating	9	8	..	47
Unforeseen obstructions	2	15	1	18
Maliciously caused	.	39	..	9
Unexplained	..	15	..	15
Total	50	70	2	122

Negligence in operating was thus the principal cause of accident, 38 per cent. of all the accidents being directly traceable to it as a general cause.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	2	30	..	32
To a pass. and a freight	12	..	..	12
To freight trains	36	40	2	78
Total	50	70	2	122
Casualties:				
Killed by	22	12	..	34
Injured by	60	175	..	235
Total	82	187	..	269

This shows accidents to a total of 172 trains, of which 46, or 27 per cent., were passenger trains, and 126, or 73 per cent., were freight trains.

There were 68 accidents in daylight and 53 at night, while in one case the time is not definitely given. The hours of daylight were nearly at their shortest during the month.

The persons killed and injured are divided as follows:

	—Employés.—		—Passengers.—	
	Killed.	Injured.	Killed.	Injured.
In collisions	15	47	7	13
In derailments	10	55	2	120
In other accidents	..	..	..	..
Total	25	102	9	133

Of the killed 74 per cent. and of the injured 43 per cent. were railroad employés, who thus made up 47 per cent. of all the casualties, an unusually small proportion.

Deaths were caused by 12 collisions and 12 derailments, and injuries by 13 collisions and 17 derailments. In all 24 accidents caused the death of one or more persons, while 30 caused lesser injuries, leaving 68 accidents, or 56 per cent. of the whole number, in which no serious injury to persons is recorded.

A few accidents appear which are attributed to causes arising directly from the weather. Generally, however, the month was a good one, fall weather being prolonged well through it, with an absence of the severe cold and heavy snow which often come in its closing days.

The month can hardly be said to present any special features, the usual causes of accident appearing with almost monotonous repetition and in nearly the same proportions as in previous months. The only marked change is a reduction in the number of collisions, which is proportionately less than for a number of months past. The worst feature, perhaps, is the large number of malicious derailments, showing that the train-wreckers were, if not unusually active, at any rate unusually successful, in their efforts.

For the year ending with November the record is as follows:

	Accidents.	Killed.	Injured.
December	148	29	209
January	168	55	199
February	184	61	186
March	142	13	137
April	106	26	114
May	120	28	77
June	91	38	95
July	119	57	204
August	144	42	136
September	158	44	183
October	174	43	234
November	122	34	235
Total	1,676	470	2,009
Total, same months, 1881-82	1,379	387	1,475
" " " 1880-81	1,480	407	1,642
" " " 1879-80	1,012	304	1,103

The yearly average for the four years was 1,374 accidents, 392 killed and 1,537 injured, which is much below the totals for the year.

The averages per day were, for the month, 4.07 accidents, 1.13 killed and 7.83 injured; for the year, 4.59 accidents, 1.29 killed and 5.50 injured.

The average casualties per accident for the month were 0.279 killed and 1.926 injured; for the year they were 0.280 killed and 1.199 injured.

The averages per month for the year were 140 accidents, 39 killed and 167 injured. November was thus below the average in accidents and in killed, but above it in the number injured.

Solidity of Construction as Affected by Prices and Interest.

The solidity of English railroad construction is commented on by Mr. W. Howard White, Chief Engineer of the Chicago, Burlington & Quincy Railroad, in his interesting and suggestive observations on English railroad practice, which we publish this week. Besides differences in national character and habits, there are differences in the economic facts of England and America which may frequently, and did formerly more than now, make solidity economical there when it would not be here. First is the lower cost of iron and labor, which enables the Englishman to make a heavier structure there for the same sum which would pay for a light one here. Much more important is the lower rate of interest there. It is not many years ago when most Western roads and many Eastern ones in this country paid at the rate of 8 or 10 per cent. for the money they expended in construction, issuing 7 or 8 per cent. bonds at a large discount. The money borrowed for English roads probably does not receive on the average as much as 5 per cent. With iron worth $30 per ton in England and $50 here (the difference has often been as great), 84 lbs. rails on the English road cost less than 56 lbs. rails here. But the cost to the company can be reckoned more properly in the yearly interest than in the principal of the capital expended, and the average American road not so long ago was paying as much interest on an expenditure of $62,500 per mile as the English road paid on an expenditure of $100,000. Putting it reversely, an improvement which would save $5,000 per year the English company could afford to pay $100,000 for, while the American company could afford to pay only $62,500 for it. Fortunately for the country, the days of these high rates of interest seem to have passed. Mr. White's own company, which still has 8 per cent. bonds outstanding, has borrowed recently at a little more than 4 per cent.

These two things, higher wages and higher interest, make an enormous difference in the proper methods of solving a great many engineering and other industrial problems in this country and Europe, so much so that one can almost say that the fact that a method is the best here is *prima facie* evidence that it is not the best there. "Labor-saving machinery," which is one of the distinguishing features of American industry, may not always be economical in Europe, and certainly is not so economical there as here. The introduction of the reaping machine about 1855 and the binding attachment recently caused a great economy, the first saving the labor of perhaps three men, whose wages were sometimes $2 a day; if the wages had been but 50 cents a day it is doubtful if we would use reapers now.

But this suggests that the great change in the interest on money in this country of late years makes it necessary to revise our standards of economical construction. What was the most economical construction on the Chicago, Burlington & Quincy when it paid 8 per cent. for money in many cases must be very uneconomical now that its 4 per cent. bonds sell for about 90.

There are many evidences that this has been felt, and that a solider construction of American railroads has become common in consequence. But it is not probable that engineers usually have sufficiently considered how generally the lower rate of interest should affect standards, and how very many things need to be reconsidered and revised in the light of this prime factor in the cost of every construction. A great change in prices, like the fall in the price of rails from $80 to $35 in the last four years, must also have an important effect on the quantity of material which it is economical to use in certain structures.

In this country standards were evolved while wages, compared with European wages, were very high, and chiefly while interest also was very high. Wages perhaps are higher than ever, certainly much higher than when the first railroads were built; but interest is much lower. It is hardly probable that our practice in construction, etc., has in all cases been so modified as to effect the best results with the lower interest.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Chicago, Milwaukee & St. Paul.—The *Cedar Rapids, Ottumwa & Sigourney Branch* is completed from Ottumwa, Ia., southward to Sigourney, 30 miles; track is also laid from Cedar Rapids, Ia., southward 20 miles.

Columbus & Eastern.—Extended eastward 13 miles, to a point 35 miles east from Hadley Junction, Ohio.

Jacksonville, Tampa & Key West.—Track laid from Jacksonville, Fla., southward to Green Cove Springs, 27 miles. Gauge, 3 ft.

San Francisco & North Pacific.—Track laid on the *San Francisco & San Rafael Branch* from San Rafael, Cal., 2½ miles.

Union Pacific.—A branch has been completed from Genoa, Neb., westward to Fullerton, 15 miles. The *Oregon Short Line* is extended west to Ontario, Or., 4 miles.

This is a total of 110½ miles of new railroad, making 6,130 miles thus far reported for 1883. The total new track reported in our columns to the corresponding date for 12 years past has been as follows:

	Miles.		Miles.
1883	6,130	1877	2,919
1882	9,922	1876	2,278
1881	7,870	1875	1,333
1880	6,139	1874	1,844
1879	3,801	1873	3,630
1878	2,263	1872	7,160

The statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

CHICAGO THROUGH RAIL SHIPMENTS EASTWARD for the week ending Dec. 21, for five successive years, have been, by the complete report:

	1879.	1880.	1881.	1882.	1883.
Tons	42,182	59,150	54,801	60,294	44,480

Thus the shipments in 1883 were one-fourth less than in 1882, and less than in any other year since 1879.

The percentage of the total shipments carried by each road this year and last has been:

	1883.	1882.		1883.	1882.
Ch. & Grand T.	12.3	10.5	Fort Wayne	13.3	17.7
Mich. Cen.	18.4	25.3	Ch., St. L. & Pitts.	13.4	12.5
Lake Shore	16.7	25.5	Balt. & Ohio	3.7	8.5
Nickel Plate	8.0	....	Chic. & Atlantic	14.2	....

Thus the three Vanderbilt roads together had 43.1 per cent. of the whole this year (against 43¾ in the pool), and the two Pennsylvania roads 26.7, while entitled to 27¼ per cent.

For seven successive weeks the Chicago shipments have been:

Week ending						
Nov. 7.	Nov. 14.	Nov. 21.	Nov. 30.	Dec. 7.	Dec. 14.	Dec. 21.
43,723	44,926	43,721	63,548	44,592	54,196	44,480

This statement is incorrect by not including some shipments at old rates in the first week of December, and possibly some in the second week; in the third week all the shipments are certainly included. There appears to have been a great evenness in the shipments except when stimulated by the approaching advance of rates in the last nine days of November (seven-ninths of which only we give here), and in the second week of December. The shipments have not increased in December this year, as they usually do, but on the other hand they had been unusually large since harvest until December. In the three fall months the total Chicago shipments for five years have been, in tons:

1879.	1880.	1881.	1882.	1883.
496,391	550,770	740,594	519,771	620,034

Thus the fall shipments were larger last year than in any other except 1881, when the railroads carried at rates so low that they took a very large part of the lake business. Now as the crops that supply traffic were less this year than in any other except 1881 it follows that an unusually large proportion of the traffic must have been carried in the fall, and therefore that a smaller proportion remains to be carried in the winter and next spring and summer. Against this it appears that the stock of grain at Chicago is not exceptionally small, but is exceptionally large instead; the number of bushels of grain of all kinds in store there Dec. 22 having been:

1879.	1880.	1881.	1882.	1883.
9,060,974	9,761,455	5,108,561	6,352,213	16,666,537

But these stocks, after all, are but a small part of the Northwestern grain, and an increase at Chicago may very easily be much more than counterbalanced by smaller stocks in farmers' hands and in store at stations west of Chicago. The stock at Chicago, large as it seems, is not equal to what

the eight Northwestern markets have often received within two weeks.

It is true that the short crop of wheat was largely made up by the unusually large surplus of the crop of 1882 left on hand after the harvest of 1883, and it is quite probable that Chicago will have more new wheat to ship this year than last, because the larger part of the country where the wheat crop was a failure does not ship by way of Chicago, and that part of the country where the wheat production was larger than in 1882 does ship by way of Chicago. But last year after November a very large part of the shipments from Chicago were corn, for which there was a pressing demand, while the new crop furnished a sufficient supply. There is no such pressing demand in the East this winter, and a much smaller supply in the West, and though so far (or for the four weeks ending with Dec. 22) the shipments of corn from the West were as large this winter as last, we cannot expect that they will continue so large. The stock of this grain on hand at Chicago and other Western markets is not large, but small. At Chicago it has been for five successive years on Dec. 22:

1879.	1880.	1881.	1882.	1883.
2,692,265	4,769,684	5,306,593	2,580,170	2,063,982

Thus the stock of corn on hand is even less than in 1882 and smaller than in any other year of the five.

It is to be said, however, that if there are even ordinary receipts of grain at Chicago during the rest of this winter there must be large shipments, because the elevator capacity would soon be filled unless room were made for receipts by means of shipments, and anything that should set the wheat moving might cause very large shipments for a time, because the grain is in Chicago ready to be shipped.

For the week ending Dec. 29 the incomplete report of through and local shipments of flour, grain and provisions eastward from Chicago makes the total 40,481 tons, against 69,700 tons in the corresponding week of last year and 52,519 in the previous week of this year. These are smaller shipments than have been reported before since August last, and smaller than in any December week since 1879. It was not to be expected, however, that the shipments should be as large as in the last half of December last year, when they were extraordinary. They were also exceptionally large throughout January, February and March last year, and if they shall not be so large this year they still may not be called small, though with two new roads taking 19 per cent. of them of course the other six roads will have comparatively a light business. Should rates be reduced, which seems probable rather than not, the reduction in net earnings from the business will be serious.

The distribution of the Chicago shipments from July 1 (when the percentages now in force took effect) to Dec. 14 is given below, together with the percentages as awarded by Mr. Fink :

	Carried.	Award.		Carried.	Award.
Chic & Grand T.	11.3	11	Fort Wayne	20.8	19¼
Mich. Cent.	16.7	18¾	Ch. St. Louis & Pt.	11.1	8
Lake Shore	13.9	17	Balt. & Ohio	6.7	7
Nickel Plate	7.3	8	Chic. & Atlantic	12.2	11

Thus the three Vanderbilt roads together appear to have carried but 37.9 per cent. of the whole, instead of the 43¾ per cent. awarded them, while all the other roads, except the Baltimore & Ohio, have exceeded their proportions.

"LOBBYING THROUGH BILLS" is a practice not confined to American legislative bodies, though it does not go by the same name nor is it exactly the same process elsewhere. In England there is a regular provision for the work, and there is a recognized body of professional solicitors who practice before parliamentary committees in behalf of parties who wish to promote or oppose private bill legislation—all as open and aboveboard as practice before a court.

It must not be inferred from this that the English substitute for "lobbying" makes it cheap to obtain charters and other legitimate legislation in behalf of private interests. Recently a parlimentary paper has been published giving the amounts paid by different interests in promoting and opposing bills during the ten years ending with 1882. During this time, which was a time when there was very little new railroad construction in Great Britain, the railroads alone spent more than $19,000,000 for these purposes, nearly $4,000,000 of which was for *opposing* bills. Very large sums were also paid by gas and water companies for these purposes, and apparently the gentlemen who practice before committees seem to lay a pretty tax on all such enterprises as a condition of their existence. Of course these expenditures are necessary for schemes which fail as well as for those which succeed, and the great expense of getting a bill doubtless puts some check on the number of enterprises started, and makes it much more certain than with us that when a charter is asked for, something is seriously intended.

The Swan the Geese, the Gold Fish and the Blind Pool.

A Swan on a Great River said to a Flock of Geese, "I have found a Shoal of Fish which, if Caught, will turn to Pure Gold. Let us Swim around them and Catch them and be Richer than Midas." And they Swam around them and Caught them all, and they turned to Pure Gold.

Then the Swan said to the Geese: "These Gold Fish are full of Roe. Give them to me and I will put them into a Blind Pool, where their Roe will make Millions and Millions of other Fish, all Pure Gold. When they are grown I will take them out, and we shall have a Big Divide." And the Geese gave the Swan their Fish, and the Swan put them into a Blind Pool and sat watching for the Roe to Hatch.

Before the young fish were grown some of the Geese stole into the Pool and said: "These young fish do not look like Gold, but they look like Silver. Let us sell our share to the Goslings." But the Swan said, "You have not read the Fish Commission report. The young of these fish are but Silver indeed, but when they are grown they all become Pure Gold. Leave them in my Blind Pool and we shall all become Richer than Midas." And the Geese left them in the Blind Pool.

But while the fish were growing the Fish-hawks and the Pikes fed on them, and when they were grown and divided among the Geese, they turned out to be Common Mackerel and not Pure Gold, nor even Silver.

This fable teaches that there are as bad fish in the sea as ever came out of it, and that when we put Gold Fish into a Blind Pool we cannot be sure of getting them out again.

THE SCRAP HEAP.

Drovers' Crooked Ways.

For some time the New York, Lake Erie & Western Co has been called upon repeatedly to pay for sheep and hogs missing from the stock trains and alleged by the dealers to have been stolen. The frequency of the losses aroused suspicion, and a detective was sent out to ferret out the mystery. He finds very often that such an animal dies *en route*, or is trampled to death, and it has been the custom of some drovers to throw the carcass off and charge the company with its being stolen. He found in Elmira, one night recently, six dead sheep were taken from one car which stood on a switch near Washingson avenue, and thrown into a ditch near the track. It is probable that there will be some further developments in the matter.—*Port Jervis (N. Y.) Gazette.*

Some Talk about Baggage.

The old saying that "There is nothing new under the sun" has lost a great deal of its significance in these days. Especially is this so when applied to a hard working class of men, universally known as baggage smashers. They are of American growth and origin. In fact, they only seem to thrive in the land of the free, and the home of the Saratoga trunk. The jokes on the baggage smasher extend back to the time when the memory of man runneth not to the contrary.

The baggage smasher is a genial sort of fellow, who likes nothing better than smashing sample cases and smoking a short, black pipe.

In order to protect themselves against the pranks of the baggage fiends travelers had iron-clad trunks made of great weight and strength. For a time the smasher was baffled, but not long. A few months ago a notice was put up in every baggage-room in the country to the effect that no single piece of baggage weighing over 250 pounds would be carried as baggage. This was a poser on the commercial men who had invested their money in anti-destructible trunks; but they had to come to time, and now trunks weighing over 250 pounds are sent by express.

The system of checking trunks has been reduced almost to perfection in this country. In England, where they have no baggage, but "luggage," the trunks are all dashed out at the station to which they are destined, and the owner is compelled to pick out his own baggage from all the rest. In the far West and South, where the baggage men have not had the advantage of a college education, there is trouble sometimes about the baggage, but a bit of colored wool or a queerly shaped chalk mark on a trunk, almost infallibly contains enough information to the unlettered agent, so that baggage is put off at the right station. But how is it that there is so much trouble about checks and trunks getting lost? There is no mystery about the affair; simply the carelessness of the owner. Ladies will often pick out a trunk among several others and have it checked, when upon opening they are horrified to find they have checked some one else's trunk, and there is no knowing where their own valuables have strayed to. A case of what might have caused a great deal of trouble happened to a lady in this city a short time ago. She went to New York for the purpose of purchasing her bridal trosseau. After remaining several weeks, and spending a little fortune, she had procured one of the most complete and elegant bridal outfits ever brought to Toledo. *En route* home she met a gentleman and wife from San Francisco; a day was spent at Niagara with the couple, the trunks were rechecked by the gentleman of the party, and they proceeded westward, parting company at this city. The next day, the young lady invited the bridesmaids and interested friends to view her bridal robes, but what was her dismay when she beheld instead of the trunks which should have contained her treasures, two well battered trunks marked "—— San Francisco." Was ever a young lady put in a more miserable plight? Her wedding day fast approaching and her bridal robes fast receding. Detectives and the telegraph were both employed. It was an old story. The man had checked the trunks all right, but had mixed up the checks. The trunks were returned, and the wedding was one of the social affairs of the season. It is a remarkable showing that out of 24,000 pieces of baggage handled by a single company during the month of October, in this city, not one was reported lost.

In case no owner applies for a trunk in 30 days it is sent to the general office of the company, held by them a year and then sold to pay charges.

"Speaking of baggage," said an old smasher, "there's one kind of baggage we handle pretty careful, and that's dead people. It isn't the nicest thing in the world to be shut up in a car all night with two or three corpses."

"How many corpses can a man take as baggage?" inquired a medical student.

"Not any," said the smasher, "corpses has to have first-class passenger tickets; they go as passengers, not as baggage." As the subject was getting mournful, and a train just coming in, the subject was dropped.—*Toledo (O.) Commercial Telegram.*

Baltimore & Ohio Relief Association.

The November sheet of this Association shows that in the month 951 benefits were paid, divided as follows: Main Stem, Transportation Department, 89. Machinery Department, 186; Road Department, 99; Trans-Ohio Divisions, 146; Pittsburgh Division, 58; Physicians' bills, 373; total, 951.

Appended to the sheet is the following circular from Vice-President Robert Garrett, of the Baltimore & Ohio Railroad Co., dated Nov. 26:

"Experience has proven that the instructions contained in the circular of Feb. 15, 1881, are frequently disregarded, to the prejudice of the company's interests and those of the Relief Association. They are therefore republished for the information and guidance of all concerned.

"The frequent failure of officials to report promptly to the proper officers of the Relief Association, as required by said instructions, every case of sickness, disability or death occurring among their forces, necessitating curtailment and sometimes the total disallowance of benefits to which members would otherwise be entitled, results in undoubted loss and hardship to them and creates much discontent. Notice is therefore given that any official who, through negligence, or from other causes within his control, fails to convey to the management of the Association the prompt notice of disablement required by said circular, will be expected and required to make good to the party in interest any loss he or she may sustain.

"Where an unreasonable time elapses between the date of a notification and the date on which it is received by the officer of the Association to whom it is addressed the responsibility for such delay will rest upon the official giving notification, unless he can show that the neglect properly belongs elsewhere.

"Officials must make their employés clearly understand that benefits are only paid from date of notification, and that it is the duty of each member of the Association to see that his sickness or disability is reported to the proper official, immediately upon its occurrence, and in such manner as that no mistake can occur. Also that neglect or carelessness in performing this duty will result disadvantageously to the member.

"No discretionary power is vested in any one to deviate from the regulations of the Association as announced Feb. 15. They are to be literally interpreted and strictly observed by all officials and others in the company's service."

A Runaway Passenger Car.

A very singular accident happened on the Eastern Division of the Erie at an early hour Christmas morning. Luckily no one was injured, but this happy result was entirely due to the fact that no passengers were in the coach which met with the accident. Train 11, coming west, Westervelt conductor, was switching some cars at Turners, and in order to facilitate matters the passenger coach was disconnected and the brake applied. After the switching was completed the train was backed up in order to couple on. The cars came back with such force as to drive the coach backward and throw the brake dog from its fastenings. From Turners to Greenwood the road-bed is a heavy down grade and there being no one on the coach it started off toward Greenwood, its speed increasing every moment. Following train 11 came regular No. 43, engine 628, Frank Hoar engineer and D. Gunderman conductor. Train 43 was running at about 20 miles per hour, and railroad men allege that the runaway coach had attained that momentum. In the darkness Hoar did not see the danger until a few moments before the two met. The coach was raised completely off its trucks and smashed into splinters, while the engine was damaged so badly as to be unable to proceed further. The coach ran back a distance of about 2½ or 3 miles. The accident happened about 2:30 in the morning. It was necessary to call the Jersey City and Newburg wreckers to clear the débris.—*Port Jervis (N. Y.) Gazette, Dec. 26.*

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Buffalo, New York & Philadelphia, annual meeting, at the office in Philadelphia, Jan. 14, at noon.

Fitchburg, annual meeting, at the passenger station in Boston at 11 a. m. on Jan. 29.

Philadelphia & Reading, annual meeting, in Horticultural Hall in Philadelphia, Jan. 14, at noon.

Dividends.

Dividends have been declared as follows:

Cheshire, 1½ per cent., semi-annual, on the preferred stock, payable Jan. 10.

Cincinnati, Hamilton & Dayton, 1½ per cent., quarterly, on the preferred stock, payable Jan. 2.

Cumberland & Maurice River, 3½ per cent., semi-annual, payable on demand.

Dayton & Michigan (leased to Cincinnati, Hamilton & Dayton), 2 per cent., quarterly, payable Jan. 2.

Delaware, Lackawanna & Western, 2 per cent., quarterly, payable Jan. 21. Transfer books close Jan. 5.

East Pennsylvania (leased to Philadelphia & Reading), 3 per cent., semi-annual, payable Jan. 15.

Long Island, 1 per cent., quarterly, payable Feb. 1. Transfer books close Jan. 15.

Manhattan, 1¼ per cent., quarterly, on the first preferred stock, payable Jan. 2, "provided the legal restraint prohibiting such payment is removed."

Pittsburgh, Fort Wayne & Chicago (leased to Pennsylvania Company), 1¾ per cent., quarterly, on special guaranteed stock, payable Jan. 2; also 1¾ per cent., quarterly, on regular stock, payable Jan. 8.

Pittsfield & North Adams (leased to Boston & Albany), 2½ per cent., semi-annual, payable Jan. 1.

Portland, Saco & Portsmouth (leased to Eastern), 3 per cent., semi-annual, payable Jan. 15.

Providence & Worcester, 3 per cent., semi-annual, payable Jan. 1.

Richmond & Petersburg, 2½ per cent., semi-annual, payable Jan. 1.

St. Paul & Duluth, 3½ per cent., semi-annual, on the preferred stock, payable Feb. 1.

Vermont Valley, 3 per cent., semi-annual, payable Jan. 2, to stockholders of record Dec. 23.

Ware River (leased to Boston & Albany), 3½ per cent., semi-annual, payable Jan. 1.

West Jersey & Atlantic (leased to West Jersey), 4 per cent., payable Jan. 5. This is the first dividend.

Trunk Lines Executive Committee.

A called meeting of the Executive Committee was held at Commissioner Fink's office in New York, Dec. 31. The proceedings were not made public, but it is said that arrangements were made to deal with the Delaware, Lackawanna & Western road actively. The New York, West Shore & Buffalo road was admitted to the pool and given, it is said, 12 per cent. of the west-bound business. The Committee adjourned until Jan. 4.

Western Trunk Lines Association.

The representatives of the roads interested in the Iowa pool traffic, with the exception of the Chicago, Burlington & Quincy, met in Omaha, Dec. 29, and concluded an agreement which it is stated is an enlargement of the original "tri-partite agreement," of which so much has been said. Under this agreement the Western Trunk Lines Association was formed, its members being the Union Pacific, the Chicago, Rock Island & Pacific, the Chicago & Northwestern, the Chicago, Milwaukee & St. Paul, the Wabash, St. Louis & Pacific, and the Missouri Pacific. The Association was at once organized with Mr. E. P. Vining as Commissioner, and the agreement was signed, to take effect Jan. 1.

Under the new contract freight will be billed through direct from Chicago to all points on the Union Pacific lines. Strict regulations will be adopted in relation to rates and the sale of tickets, and roads east of the Missouri River will not be allowed, under any circumstances, to make a rate from Chicago to points beyond Omaha less than the rate from Chicago to Omaha.

It is the intention to incorporate the Southwestern and the Colorado Traffic Associations with the new Association as soon as possible.

The last meeting of the Iowa Trunk Lines Association was to be held in Chicago, Jan. 3, when it was expected that an *ultimatum* would be presented to the Chicago, Burlington & Quincy.

The Iowa Pool Meeting.

A dispatch from Chicago, Dec. 31, says: "The long looked-for meeting of the general managers and general freight agents of the Iowa pool lines was held to-day at Commissioner Midgley's office. The roads represented were the Burlington, Rock Island, Northwestern, St. Paul, Missouri Pacific, and the Wabash. As far as the Iowa pool is concerned, it was decided to let it expire under the notice of withdrawal given by the Milwaukee & St. Paul, there being no longer any necessity for its existence. All the arrangements for winding up the affairs of the pool were successfully perfected and the Commissioner was instructed to close all accounts as speedily as possible. It will take about six months to completely wind up all the business of the pool. The queston of the fate of the Colorado Traffic Association was then taken up. Some of those present were under the impression that the Utah business was not included in this pool, which was found to be a mistake. The roads which have entered into the tripartite agreement thereupon gave the required notice of withdrawal from this pool, which will therefore expire Feb. 1. Such notice was necessary because the Alton, which is a member of the Colorado pool, was not a party to the Iowa pool, and under the agreement the Iowa roads were forced to give due notice. A war on Utah rates has been going on for some time, and the action taken to-day is supposed to mean that the fight will be extended to all Colorado points. The Nebraska pool was also practically abandoned to-day, the 30 days' notice being given by all the roads concerned. No reference to the Southwestern pool was made, and it will continue in existence for the present. It is not believed, however, that even the Southwestern Association can be maintained in the face of the Colorado and Utah war and the position taken by the Burlington with reference to the new Western Trunk Lines Association."

ELECTIONS AND APPOINTMENTS.

Alabama Great Southern.—Mr. E. L. McLaren is appointed Superintendent in place of C. B. Wallace, resigned.

Atchison, Topeka & Santa Fe.—Judge George W. McCrary has been appointed General Counsel of this company. Judge McCrary has served in Congress and as Secretary of War, and for several years past has been United States Circuit Judge, which office he now resigns.

Beach Creek, Clearfield & Southwestern.—Mr. A. G. Palmer has been appointed Superintendent of this new road, with office at Jersey Shore, Pa. He has been for some time Assistant Superintendent of the Western Division of the New York Central.

Boston & Lowell.—At the annual meeting in Boston, Jan. 2, the old board was re-elected, as follows: Josiah G. Abbott, Wm. A. Burke, Channing Clapp, Frederick E. Clarke, T. Jefferson Coolidge, Edwin Morey, Thomas Talbot. The board re-elected Josiah G. Abbott President.

Brattleboro & Bennington.—At the annual meeting in Brattleboro, Vt., Jan. 1, the following directors were chosen: O. E. Butterfield, Edward Crosby, J. J. Estey, Kittridge Haskins, W. P. Jones, J. H. Kidder, W. W. Lynde, H. G. Porter, Andrew J. Tucker.

Chicago & Atlantic.—Mr. W. H. Brimson has been appointed Superintendent of Telegraph. He has served on the Jeffersonville, Madison & Indianapolis and the Lake Shore roads.

Detroit, Lincoln & Denver.—This company has been organized at Denver, Ind., with the following officers: President, Charles F. Conrad; Vice-President, Amos D. Owen; Secretary, Treasurer and Engineer, L. Bush.

Fernandina & Jacksonville.—At the annual meeting in Jacksonville, Fla., recently, the following directors were chosen: E. H. Harriman, J. O. Bayard Cutting, Ferd. W. Peck, Elijah Smith, D. E. Maxwell, J. D. Campbell, B. S. Henning.

Galena & Marble Cave.—The officers of this new company are: Dr. James Beaver, President; B. F. Yocum, Vice-President; Dr. Patton, Secretary; A. P. Harwood, Treasurer. Office in Galena, Missouri.

Harlem River.—The officers of this new company are: John H. Cheever, President; William Ryder, Vice-President; C. A. Cheever, Secretary; G. E. Harding, Chief Engineer.

Hartford & Harlem—At the annual meeting in New Haven, Dec. 29, the following directors were chosen: Henry G. Lewis, Henry Killam, Samuel G. Thorne, New Haven, Conn.; Warren H. Day, Bridgeport, Conn.; F. W. Bruggerhoff, Darien, Conn.; Albert M. Billings, Chicago, Ill.; F. L. Higginson, Charles P. Whittier, Boston; Lewis M. Brown, Charles G. Francklyn New York. The board elected Charles G. Francklyn, President; Lewis M. Brown, Vice President; W. F. Van Pelt (of New York), Treasurer; Samuel G. Thorne, Secretary.

Houston & Gulf Shore.—The officers of this company are: Paul Bremond, President; Charles Tinsley, Vice-President; J. A. Dozier, Secretary and Treasurer; Charles G. Fitz, General Freight and Passenger Agent; A. Cross, Chief Engineer. Office in Houston, Texas.

Jeffersonville, Madison & Indianapolis.—Mr. S. H Church is appointed Superintendent of Transportation, to take effect Jan. 1. He will have charge of the distribution of cars, their numbering and weighing, will keep a record of their movement, and see that they are handled promptly. All reports or inquiries relating to the movement of cars, hitherto addressed to F. H. Kingsbury, Assistant General Freight Agent, should be sent to him. He will also perform such other duties as may be assigned to him from time to time by the Manager. His office will be at Columbus, Ohio

Louisville & Nashville.—Mr. S. R. Knott is appointed Assistant to the Vice-President, taking effect Jan. 1, 1884.

Mr. R. Montfort is appointed Resident Engineer in charge of the Departments of Roadway, Bridges, and Buildings, to take effect Jan. 1, 1884.

Louisville, New Albany & Chicago.—Mr. A. B. Southard has been appointed Assistant to the President and General Traffic Manager. He was formerly connected with the road, but has since served on the Wabash and other lines.

Maine Central.—The new board has re-elected George E. B. Jackson President.

Michigan Central.—Mr. Wm. H. Perry has been appointed General Agent at Buffalo, in charge of all freight matters.

Middle & East Tennessee Central.—The officers of this new company are: President, W. S. Monday; Secretary and Treasurer, M. Anderson. Office at Gallatin, Tennessee.

Minneapolis & St. Louis.—Mr. T. E. Clarke is appointed Superintendent of this company, taking effect Jan. 1, 1884. The position of Assistant Superintendent, heretofore occupied by Mr. Clarke, is abolished.

Moorhead & Chicago.—The directors of this company are: E. C. Sprague, John Erickson, P. H. Lamb, F. J. Burnham and F. E. Briggs. Office in Moorhead, Minnesota.

New Haven & Northampton.—At the annual meeting in New Haven, Jan. 2, the following directors were chosen: Charles N. Yeamans, Westfield, Mass.; Horatio G. Knight, Easthampton, Mass.; Charles M. Pond, Hartford, Conn.; Wm. D. Bishop, Bridgeport, Conn.; George J. Brush, Daniel Trowbridge, Ezekiel H. Trowbridge, Edward M. Reed, George H. Watrous, New Haven, Conn. The board re-elected Charles N. Yeamans President; Edward A. Ray, Secretory and Treasurer.

New York & New England.—Mr. Charles P. Clark, lately elected President of this company, has been appointed Receiver by the United States Circuit Court.

New York, West Shore & Buffalo.—Mr. James D. Layng has been appointed General Manager in place of Mr. Charles Paine, resigned. Mr. Layng recently resigned the position of General Superintendent of the Chicago & Northwestern road, after holding it about a year; he had been previously General Superintendent of the Pittsburgh, Fort Wayne & Chicago, having been connected with that road for a long time. Mr. Layng has been trained under the Pennsylvania system, and his appointment makes the West Shore staff largely consist of former Pennsylvania officers.

Mr. T. J. Bassett has been appointed General New England Agent, with office in Boston. Mr. C. C. Lambert is appointed General Western Agent, with office in Chicago.

Nickel Plate Line.—Mr. Charles S. Tappan has been appointed General Manager of this new fast freight line, with office in Rochester, N. Y. The line began operations Jan. 1.

Northern Pacific.—Mr. Otis Sprague has been appointed Superintendent of the Pacific Division, with office at New Tacoma, Wash. Ter.

Mr. C. W. McLaughlin has been appointed Foreman of Bridges and Buildings on the Yellowstone and Montana Divisions.

Pottsville & Mahanoy.—The officers of this new company are: President, Joseph C. Bright; Directors, John Phillips, Guy E. Farquhar, Robert Allison, L. C. Thompson, F. G. Yuengling, D. A. Smith, Heber S. Thompson, Henry Royer, all of Pottsville, Pa.; Secretary, Heber S. Thompson.

St. Louis & San Francisco.—The following order has been issued: "On and after Jan. 1, 1884, what has heretofore been the Missouri & Arkansas Division of the St. Louis & San Francisco Railway will be divided into two divisions. The Eastern Division will extend from St. Louis to Springfield, Mo., with headquarters at Chouteau avenue, St. Louis. Mr. A. Veech is hereby appointed Superintendent of the Eastern Division, the appointment to take effect on the above named date. His orders as such will be respected and obeyed accordingly.

"That portion of the road from Springfield, Mo., to Red Fork, I. T.; from Plymouth, Mo., to Chadwick, Mo., will hereafter be known as the Central Division of the St. Louis & San Francisco Railway, with headquarters at Springfield, Mo. Mr. W. A. Thoms is hereby appointed Superintendent of the Central Division, the appointment to take effect on the above date, and his orders as such will be respected and obeyed accordingly."

Mr. S. H. Jennings is appointed Northern Passenger Agent for this line, with office at 101 Washington street, Chicago, Ill., *vice* Mr. Chas. E. Jennings, resigned.

St. Paul, Minneapolis & Manitoba.—Mr. C. H. Warren is appointed Assistant General Passenger Agent in place of H. C. Davis, resigned.

Sinaloa & Durango.—Mr. E. P. North, Vice-President and General Manager, having resigned, all correspondence should be addressed to S. W. Richardson, Treasurer, in Boston.

Toledo, Cincinnati & St. Louis.—Mr. Frank F. Allen has been appointed Superintendent of the Illinois Division, with office at Charleston, Ill. He was recently on the Michigan Central.

Western Trunk Lines Association.—Mr. E. P. Vining, Traffic Manager of the Union Pacific road, is appointed Commissioner of this new Association, whose formation is noted elsewhere.

Woodruff Sleeping & Parlor Coach Co.—On Jan. 1, 1884, the general office of this company was removed to No. 430 Walnut street, Philadelphia.

PERSONAL.

—Mr. Jay Gould has resigned his position as a director of the New York & New England Railroad Company.

—Mr. C. B. Wallace has resigned his position as Superintendent of the Alabama Great Southern road. The cause is not stated.

—Mr. H. C. Davis has resigned his position as Assistant General Passenger Agent of the St. Paul, Minneapolis & Manitoba road.

—Mr. Edward P. North has resigned his position as Vice-President and General Manager of the Sinaloa & Durango Railroad Company.

—Mr. E. P. Vining has resigned his position as Traffic Manager of the Union Pacific road, in order to accept that of Commissioner of the new Western Trunk Lines Association.

—Mr. Henry Villard has, it is understood, tendered his resignation of his office as President of the Northern Pacific Railroad Co. on account of ill health. It has not yet been acted on by the board, but there seems to be little doubt that it will be accepted.

—Mr. J. W. Jones has announced to the stockholders of the Buffalo, New York & Philadelphia Railroad Co. that he will not be a candidate for re-election at the approaching annual meeting. Mr. Jones intends to retire from business altogether for a time, and to spend several months in Florida for the benefit of his health.

—Col. G. J. Foreacre has issued the following parting circular, dated Dec. 31, to the officers and employés of the Lawrenceville Branch, the Roswell Railroad, the Georgia Pacific, the Hartwell Railroad, the Elberton Air Line and the Northeastern Railroad, of Georgia, the general superintendency of which roads he has just resigned: "My connection with the above named roads terminates this day. In retiring from their management I desire to thank you for your ever cheerful and prompt compliance with all demands made upon you in the conduct of the business intrusted to our care. For my successors I bespeak the same untiring devotion to business which you have heretofore accorded me, and hope that each of you may receive in return the reward and promotion you deserve. Wishing that the new year may bring to each of you and yours the fullest measure of health, prosperity and happiness, I remain sincerely yours."

—General Andrew A. Humphreys, Chief of Engineers of the United States Army, died in Washington Dec. 27. He was appointed to the West Point Military Academy from Pennsylvania July 1, 1827; was graduated July 1, 1831, and appointed second lieutenant of Second Artillery the same day; promoted first lieutenant Aug. 16, 1836; resigned from the service Sept. 30, 1836. From that time until July 7, 1838, he was employed as a civil engineer in the service of the United States to assist Major Bache on the plans of the Brandywine Shoal lighthouse and the Crow Shoal breakwater in Delaware Bay. On July 7, 1838, he was reappointed to the army with the rank of first lieutenant in the Corps of Topographical Engineers. From that date until May 31, 1848, when he was promoted to be captain in the same corps, he assisted in many important works done by the corps, and after his promotion was placed in charge of several important topographical and hydrographic surveys. During the war of the rebellion he served on the staff of Major-General McClellan as major, Corps of Topographical Engineers. He was promoted colonel March 5, 1862, and commissioned as brigadier-general of volunteers April 28, 1862, and participated in a number of decisive battles in Virginia. He was breveted Dec. 13, 1862, for gallant and meritorious services at the battle of Fredericksburg, Va. He was made a lieutenant-colonel, Corps of Engineers, March 3, 1863, and served as chief of Major-General Meade's staff from that date until July 8, 1863, when he received a commission as major-general of volunteers. March 13, 1865, he was breveted brigadier-general in the regular army for gallant and meritorious services at the battle of Gettysburg and breveted major-general on the same day for gallant conduct at the battle of Sailor's Creek, Va. He was mustered out of the volunteer service Aug. 31, 1866, and promoted to the rank of brigadier-general in the regular service and assigned to duty as Chief of Engineers.

OLD AND NEW ROADS.

Buffalo, New York & Philadelphia.—At a meeting held Dec. 31 the stockholders voted to approve the action of the board in executing a consolidated mortgage for $25,000,000, reserving $21,000,000 to provide for prior liens. Of the $4,000,000 new bonds allowed under this mortgage, $1,700,000 have already been issued, and the remainder will be used as needed for new equipment and improvements of road.

Chicago, Burlington & Quincy.—This company, it is said, will add two lines to its mileage in Nebraska the coming spring. One is the cut off from Kenesaw on the Burlington & Missouri River main line southwest to Oxford on the Republican Valley line. This will be about 60 miles long, and will shorten the line to Denver about 30 miles. The other is a branch from Odell, Neb., southwest to Concordia, Kan., 67 miles, partly in Nebraska and partly in Kansas. On the Kenesaw-Oxford cut-off work is now in progress.

Chicago, Milwaukee & St. Paul.—On the Cedar Rapids, Ottumwa & Sigourney Branch, the track is now reported laid from Ottumwa, Ia., to Sigourney, 30 miles. On the 60 miles from Ottumwa to Cedar Rapids, a large part of the grading is finished, nearly all the bridges done and track laid for 20 miles. The whole line will probably be opened for business in the spring.

Chicago & Northwestern.—The extension of the old Sheboygan & Fond du Lac road from Princeton, Wis., west to Valley Junction, 60 miles is now about half graded, and work is progressing well. Tracklaying has been begun from Valley Junction eastward, where the grading is all completed for about 20 miles.

Columbus & Eastern.—Chief Engineer F. J. Aid, informs us that the track on this road is now completed for 35 miles eastward from Hadley Junction, O., the terminus being 63 miles from Columbus and in the principal coal fields which the road was intended to reach. The ballasting of the track with limestone and gravel is well under way, and the rolling stock is arriving. The road will be opened for business Jan. 15, and the mines on the line will be ready to make shipments. The road has been substantially built, and its projectors are satisfied with its prospects for business as an outlet for the coal fields of Perry and Muskingum counties.

Connotton Valley.—The report is renewed that negotiations are in progress for the sale of this road to the Pennsylvania Company. The object of that company is said to be chiefly to secure the terminal property in Cleveland.

Delaware, Lackawanna & Western.—At a meeting of the board last week the following statement was presented for the eleven months ending Nov. 30, including all the company's operations:

Gross earnings for eleven months	$20,781,735
Expenses	21,799,209
Net earnings	$7,982,526
Rentals of leased lines and interest on bonds	4,523,937
Surplus	3,458,589

This surplus is equivalent to 13.2 per cent. upon the stock, while the dividends paid for the year have been at the rate of 8 per cent.

Denver & Rio Grande.—This company makes the following statement for November and the eleven months ending Nov. 30, including the Utah lines:

	November	Eleven months.
Earnings	$635,857	$6 805,607
Expenses	413,561	4,348,770
Net earnings	$222,296	$2,454.837
Miscellaneous receipts		114.531
Total net income		$2,569,368

The expenses were 65.0 per cent. of earnings, and 63.9 per cent. for the eleven months. For November the increase in net earnings, as compared with November, 1882, was $61,882, or 38.6 per cent. For the eleven months the increase in net income was $160,157 or 6.6 per cent.

Detroit, Lincoln & Denver.—This company has been incorporated to build a railroad from Plymouth, Marshall County, Ind., in a northeasterly direction through the counties of Kosciusko, Elkhart, Noble, LaGrange and Steuben, to the east line of the state, a distance of 80 miles.

East Tennessee, Virginia & Georgia.—At a meeting of the board held last week it was resolved that certain business now sent over the Norfolk & Western from Bristol, shall hereafter be sent over the North Carolina Division, from Morristown to Paint Rock, and thence over the Western North Carolina and the Richmond & Danville lines.

A committee of three directors was appointed to confer with the officers of Norfolk & Western and Shenandoah Valley roads with a view to the consolidation of the three companies. This action, it is said, is merely a formality, as no such consolidation is now expected to be made.

Evansville & Terre Haute.—The directors of this company have declared a 20 per cent. stock dividend. The capital stock of the company is $3,00 ,000, $500,000 of which has been in its treasury since its organization, and has long since been listed at the Stock Exchange. The action of the directors, therefore, is not an increase of the capital stock.

Galena & Marble Cave.—This company has been organized to build a railroad from Marion, Mo., on the St Louis & San Francisco road, to Galena in Stone County and thence to Marble Cave. The distance is 32 miles.

Green Bay, Winona & St. Paul.—This company publishes the following statement for the eleven months ending Nov. 30:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings	$375,317	$358,555	I. $16,762	4.7
Expenses	296,288	297,221	D. 933	0.3
Net earnings	$79,029	$61,334	I. $17,695	28.9
Per cent. of expenses	78.9	82.9	D. 4.0	....

The earnings, though showing a gain, are still very light, being this year $1,706 gross and $359 net per mile of road.

Harlem River.—This company has filed plans of its projected road. It proposes building a line of road extending from Woodlawn, the junction of the New York, New Haven & Hartford and the Harlem railroads, to a point on the Harlem River at the northern end of High Bridge, connecting with the New York Central, the New York City & Northern, and the elevated roads at the Third and Eighth avenue bridges. The project also includes the building of docks and warehouses on the Harlem River.

Houston & Gulf Shore.—Work will soon be begun on the tracklaying on this road, which is to run from Columbia, Tex., on the International & Great Northern road, westward to Wharton, about 30 miles. The grading is now nearly finished.

Hot Springs.—Arrangements are being made to extend this road from its present terminus as Malvern, Ark., eastward to a connection with the Texas & St. Louis road. The object is to secure a connection in addition to that now made with the Iron Mountain road at Malvern.

Intercolonial.—An arrangement has been made under which the Eastern Extension, from New Glasgow, N. S., to the Straits of Canso, now operated by the Nova Scotia Government, will be transferred to the Dominion Government and operated as a branch of the Intercolonial.

Island.—This company was recently organized to build a short line in Buffalo, N. Y., its purpose apparently being to own and enlarge the yards and shipping docks of the Pennsylvania Coal Co. in Buffalo, and to build some track connections desired there. It has recorded deeds showing the purchase of the present property of the Pennsylvania Coal Co., and has executed a mortgage for $500,000 thereon.

Jacksonville, Tampa & Key West.—The track of this road is now laid to Green Cove Springs, Fla., 28 miles southward from Jacksonville, and work is progressing toward Palatka, 27 miles further.

Little Rock & Fort Smith.—The Boston *Advertiser* of Dec. 29 says: "The January coupons will be funded and the interest on the scrip be paid. The trustees have canceled, from the proceeds of land sales, since Jan. 1, $120,000 of the 7s, and have a surplus applicable to the same end. The company has been wrestling with a floating debt, and reduced it from $272,579 a year ago to a nominal figure, proceeds from the sale of treasury bonds and earnings, chiefly the latter, being used for that purpose. The outstanding bonds have been reduced from $2,476,500 to $2,453,500, but the scrip debt has been increased some $200,000. One reason for funding the January coupons is the fact of considerable expenditures for a steamboat line to run along the south bank of the Arkansas River. The railroad is on the north bank, and the ferries are so few that the company has lost considerable freight from the south side. The steamboat line will collect this freight everywhere along the route and deliver it to the railroad for shipment. Two steamboats have been bought, and one or two others are to be added to the line. The Little Rock, Mississippi River & Texas road has run a steamboat in a similar manner, which has yielded an income of 20 per cent. on the cost. Preparations to build the bridge across the river, connecting the two roads, continue; one proposal having been received to do it for $225,000. The Little Rock road will sell the bridge or junction railway company which builds the bridge some $35,000 worth of land needed for the purpose, receiving therefor cash of the equivalent in securities of the new company."

Louisville, St. Louis & Texas.—This company has been organized to build a railroad from Louisville, Ky., west by south through Owensboro and Henderson to Uniontown on the Ohio, opposite Shawneetown, Ill. The line is generally parallel with the Ohio River and about 175 miles long.

Memphis & Charleston.—The Memphis (Tenn.) *Appeal* says: "A large amount of work has lately been done by the railroads at McGee station, two miles east of the city, where the Memphis & Charleston and the Kansas City, Springfield & Memphis railroads connect. The connection was made in order to make it easy for the latter road to transfer shipments of bulk, grain and meat designed for southern and southeastern points, and although the work has not yet been completed a great deal of this transferring has already been done. Four acres of ground were purchased for the use of the railroads, and by Jan. 1 next all the work now under way will be completed, grading and build ings. A platform 20 ft. wide by 290 ft. long has already been constructed, with an office at one end. There is also a hoisting shed 20 by 80 ft. in size. Workmen are now busy digging for a turn-table. Two tracks, one belonging to the Memphis & Charleston, and the other to the Kansas City road, will be run parallel with each other for a distance of 300 ft. The former track will be 5 ft. lower than that of the Kansas City road, so that the grain may be emptied from one car to another without trouble by means of a large connecting pipe or gutter running from the car on the elevated track to that on the lower track. Eight cars may be transferred in this way at the same time, and the business of both roads greatly expedited. A steam jack will also be provided for the purpose of lifting cars containing bulk meat from the Kansas City track to those of the other road, which are of a different gauge. The progress of the work has so far been very slow, but is now being pushed rapidly, as it is now necessary to perfect these arrangements at once on account of the increasing volume of business."

Mexican Railroad Notes.—The following notes are from the *Mexican Financier* of Dec. 1:

On Nov. 19 the work on the railway from Guadalajara to the great lake of Chapala was begun.

The engineers who are to make the survey for the railway from San Andrés Tuxtla through Catemaco to the port of Santecomapam have gone from Vera Cruz to the Coast of Sotavento to begin their work.

The concession from the Federal Government to Mr. Manuel Payno for a railway from a point between Nautla and Tampico to the capital and thence to the Pacific Coast between Chacalma and Maruata has been declared forfeited through the expiration of the required time for the beginning of the work.

News from the Rio Fuerte district of the date of Oct. 18 is to the effect that Chief Engineer A. K. Owen, of the American & Mexican Pacific Railway is pushing forward the survey with great energy. In the second half of September the survey of 20 kilometers from Topolobampo to the Rio Fuerte was completed, and it was expected that in October the survey of the line between San Blas and the the Villa del Fuerte would be finished, enabling the work of construction of that part of the line to begin. Mr. K. Rogers, the counsel for the company was, at last accounts, expected at Mazatlan to make arrangements for the building of the company's branch projected from that port to the Rio Fuerte.

The Mexican Railway has for some months occupied the train-house of its handsome new station, and now the part devoted to offices is so near completion that the various departments are gradually taking possession of their new quarters. The building is one of the handsomest in Mexico, showing that its architect, Chief Engineer Foot of the company, has an artistic taste equal to his more practical accomplishments. There is a quietly elegant Renaissance, executed in a white limestone with rich carvings well subordinated to the effect of the simply composed mass. The gilding is finely situated for effect, the facade being visible from the grand Paseo de la Reforma, as it stands at the end of a broad avenue. The construction, with flat roofs and large casement windows of plate-glass, is well adapted to Mexican climatic conditions with no attempt to impose foreign notions in building upon a locality where they would be unsuitable. The interior is worthy of the exterior, having as a main feature a great entrance hall and a grand staircase facing the central doorway. The decorative painting of the interior was done by Mr. Pedro H. Balling of this city, who, upon the wall of the grand staircase has painted an allegorical frieze in monochrome, representing, semi-humorously, the invention of steam and the triumph of the railway over old methods of transportation. Other allegorical figures occupy the corners of the hall ceiling. Mr. Balling has, however, executed his masterpiece in the directors' room, which occupies the centre of the second story. This room is brilliant in color and gold, and the ceiling has an elaborately beautiful design, with arabesque work in the centre and on either side landscapes showing two of the most magnificent pieces for which the railway is famed—the ascent to the table-land near Orizaba, and the Maltrata Valley. The rooms of the officers are finished in ornamental American woods and carpeted with rich fabrics of American manufacture. The company, by investing such a sum of money in this fine terminal station, seems to indicate a confidence in the future of its property.

The following additional notes are from the *Mexican Financier* of Dec. 8:

The Mexican National Railway is now in operation to San Miguel de Allende, and runs through both to that city and to Morelia in one day, leaving here at 6:30 in the morning and reaching Allende at 8:50 at night, and Morelia at 9:25. The next important point to be reached on the main line, beyond Allende, is Dolores de Hidalgo, the birthplace of Mexican Independence.

The President of Honduras has granted a very valuable railroad concession to three New York capitalists, William H. Warner, H. K. Wheeler and M. O. Sheldon. A land grant of eight square miles on each side of the track for each mile of road constructed is to belong to any company organized by these gentlemen, and completing a railroad by Aug. 1, 1887 from Trujillo, a seaport of 5,000 inhabitants, to the Roman River, a distance of 20 miles. The road is then to extend for a distance of 50 miles up the Arenal Valley. It will traverse a country very rich in cabinet and dye woods.

Lagos has generally been deemed the point of departure for the Pacific line of the Mexican Central, but on account of the roughness of the country between there and Guadalajara it is believed a better and less expensive route can be found, and reconnoissances are in progress under the direction of Chief Engineer Early. It now appears likely that the best line to Guadalajara will be found by leaving the main line in the neighborhood of Irapuato, and possibly following the course of the Rio Lerma and the north shore of Lake Chapala. This would take the line through a fine and fertile country all the way, whereas the country between Lagos and Guadalajara is, for the most part, arid. Guadalajara being the second business city in the republic, and in great need of railway communication, it appears likely that work on the line thither may begin very soon after the completion of the main line.

The following additional notes are from the *Mexican Financier* of Dec. 15:

The railway from Cholula to Atlixco will be inaugurated on Dec. 24.

The Vera Cruz, Anton Lizardo & Alvarado Railway is completed to kilometre 55.

The time for building two railway lines from Guadalajara, the one to Lake Chapala and the other to Jonacatlan and La Piedad by way of La Barca, has been extended for one year.

The track of the Mexican Central has reached Zacatecas, and it is hoped that arrangements for the opening of the line to that city at least by Jan. 1 can be made. Mr. Fick went up the line with the government inspector on Thursday. Less than 60 kilometres of grading remain to be done between the ends of the track.

An English steamer is on the way to Brazos with 1,254 tons of rails and material for the Matamoros & Monterey line of the Mexican National, sufficient to complete the 12 kilometres called for before Jan. 12 by the concession. This will bring the line 123 kilometres from Matamoros, 40 kilometros beyond Reynosa. The line is now beyond Reynosa.

The Mexican National will soon begin running a fast freight train over its line, making the trip between Morelia and the capital in one day, giving the best facilities for bringing the fruits of Michoacan to market. As was predicted, the earnings of the company are showing a handsome increase from the business of the new lines recently placed in operation.

The new building for the offices of the Mexican Central is nearly finished, and probably by Jan. 1 will be fully occupied. The transportation and the freight and passenger departments, under Mr. Garner and Mr. Parker respectively, have been in their quarters for some weeks, and the Auditor's and Treasurer's departments will soon follow. The General Manager's office will remain in its location on the Plaza of San Fernando for the present, there not being room in the new building. The structure is of three stories, brick and tepatate, standing at the head of a substantial new freight-house of the same material. It is conveniently and comfortably arranged, the chief objection being the windows, which are too small, not admitting sufficient light, while casement windows would have been better for the conditions of Mexico than the sliding sashes introduced. The building is extremely plain, but it should not be given the name of "the new station," as has wrongly been done, for it has nothing to do with the station building. The train-house of the new station is nearly finished and will probably be occupied next month. It consists of an iron roof supported upon handsome and massive pillars of Querétaro and Guanajuato stone, the sides thus being left open, giving a pleasant airy look. The waiting and baggage rooms will be, for the present, in a small structure built at the head of the train-house, of the same style as some of the wayside station buildings along the line. In due time, however, this will give way to a more sightly structure, which will conceal the ugly office building from view. The company wisely concluded not to go to any expensive outlay at present, but when its earnings justify the step we may expect to see a building that will compare favorably with the new station of the Mexican Railway, next door.

Middle & East Tennessee Central.—This company has been organized to build a railroad from Gallatin, Tenn., on the Louisville & Nashville road, eastward to Wattburg in Morgan County, and thence southeast to Knoxville, a distance of about 140 miles.

Moorhead & Chicago.—This company has been organized to build a railroad from Moorhead, Minn., southward to the south line of the state.

New York & New England.—A movement in the affairs of this company was made Dec. 31, which, if not altogether unexpected, was somewhat sudden. On the evening of that day some of the directors met in Hartford, Conn., and as a result of their deliberations application was made late at night to Judge Shipman, of the United States Court, for the appointment of a receiver. He granted the application and appointed Mr. Charles P. Clark, the lately elected President, to the position. The reasons given for this action were that a large part of the floating debt is pressing and that it was necessary to protect the road against vexatious suits, attachments, etc. It is also reported that some arrangements looking to a receivership had been made from another quarter, and that the directors, knowing of this, desired to make the first move. Probably a receivership was inevitable, as the company's affairs are in a very unsatisfactory state. It is understood that an effort had been made to raise money among the stockholders to relieve the embarrassments of the company, but that it failed on account of the refusal of some of the larger stockholders to contribute.

The money to pay the January coupons has been contributed by some of the directors, who purchase the coupons from the bondholders, and will hold them as security for repayment of the advances thus made.

President and Receiver Clark explains the situation in this way. "The sum of $330,000 interest on the first mortgage bonds was due to-day, and the directors have made arrangements to have the coupons cashed at the National Bank of Commerce. At their last meeting the directors, after a thorough examination of the road's finances, passed a vote so that they could be called together if an emergency should arise. I became impressed with certain suspicions which rendered it unsafe to leave things as they were, and, considering it necessary to make application to the court for protection, I exercised my power and called a meeting last night at Hartford. At that meeting the directors voted to ask the United States Circuit Court for the appointment of a Receiver, and I was appointed by Judge Shipman. This was the only thing that could be done to prevent the road from being dismembered and its business disturbed and embarrassed, and it gives the shareholders an opportunity to pay the floating debt. I have perfect confidence in the property, and I believe it can pay all its debts and be of value to its stockholders besides. If the property were allowed to be idle, or if its business were interfered with, its fixed charges of $1,250,000 and its floating debt would soon absorb the entire value of the stock. If allowed to drift along by default, the principal, as well as the interest, of the ten-million-dollar mortgage would soon be due, with a little prospect of the second bondholders, the creditors of the floating debt, or the stockholders getting anything out of it. Such a course would show a want of capacity in me, and would be virtually a wrecking of the property. My duty is to put it in a position where there can be no dismemberment, and where the owners can pay their debts in any way they think best. I shall get every dollar out of the property possible for the owners, and I shall make no changes other than those I should have made as President."

Mr. Clark is also represented as saying that he is convinced that the stockholders must lift the debt, and that the sooner they come to this conclusion the better it will be for them and their interests. Another meeting of the directors will be held Jan. 7, and arrangements will then be made for the calling of a special meeting of the stockholders.

In order to ratify the appointment formal application was made to Judge Nelson in the United States Circuit Court in Boston, Jan. 1, in the name of Henry A. Brassey, a holder of second-mortgage bonds. The Court postponed action.

New York, West Shore & Buffalo.—The New York *Evening Post* of Dec. 31 says: "The decline of the first-mortgage 5 per cent. bonds of the New York, West Shore & Buffalo on Saturday to 68, and the concurrent decline of the stock of the North River Construction Co. to 26 has started much speculative comment as to what may be the financial condition of both companies, but particularly the latter, which is the builder of the West Shore road. The road being now practically completed the cost of the 472 miles (viz.: Weehawken to Buffalo 425 miles, Albany Branch 13 miles, Cornwall to Middletown 25 miles, other branches 9 miles) is estimated at $57,000,000. The resources of the North River Construction Co. (besides its own stock) for building this line were the $50,000,000 of first-mortgage bonds and $40,000,000 of stock of the New York, West Shore & Buffalo. A contract was made with the Ontario & Western Railroad Co. by which the latter was to receive $10,000,000 of the bonds and $2,367,000 of the stock of the New York, West Shore & Buffalo in consideration of building the line from Weehawken to Cornwall and from Cornwall to Middletown, in all about 70 miles. What price was fixed on these bonds is not made public, but as the other West Shore bonds were taken by a syndicate and offered to the public with a bonus of 15 shares of stock with every $100,000 of the bonds at 73 for the bonds, it is safe to say that the bonds did not realize as much as 73 net for the construction of the road. But placing them at that figure we have the following resources of the Construction Company for the building of the road, viz.:

North River Construction Co stock	$10,000,000
West Shore bonds $50,000,000, at say 73	35,500,000
Total	$45,500,000

"The deficiency, therefore, to be supplied by the North

River Construction Co. would be, say, $11,500,000. The Construction Co. has received funds from other sources, or it could not have completed the road at anything like the above estimated cost, and to whatever extent it has so received money from other sources the amount would offset the deficiency as above estimated. The principal assets of the Construction Co. are now understood to be the $21,000,000 of West Shore stock (the other $19,000,000 having been given in bonuses with the bonds) and some telegraphic rights, etc. The $21,000,000 of stock at the quoted prices on Friday of 12¾ is worth about $2,700,000, thus making the deficiency of the North River Construction Co about $8,800,000. The principal value of the $21,000,000 of stock is that it carries the legal control of the road as long as there is no default of interest or foreclosure under the first-mortgage bonds. As it requires net earnings of only $2,500,000 to pay the interest on the bonds there seems no cause for apprehension that there should be any foreclosure. Rumor has credited Mr. Vanderbilt with being a purchaser of the North River Construction Co. stock, which would give him the control of the West Shore road for some insignificant sum between $3,000,000 and $8,000,000, though whether there is any truth in these reports is impossible yet to say; but whatever developments there may be in this line the first-mortgage bonds could not be displaced."

The *Post* is in error in saying that the road is "practically completed." For half of its length there is only a single track, and much remains to be done to put it in the superlatively good condition which it was intended to reach; for it was designed to make it from the first equal to the very best of the old trunk lines, and capable of doing the best work—running with the greatest speed and regularity—from the first, or rather as soon as the road-bed was consolidated, which takes some time.

The North River Construction Co. stock, which the *Post* says has fallen to 26, is full-paid stock, and at one time sold for $150. Its value depends on the profits made in constructing the road, and these again depended largely on the prices which the Construction Co. would receive for the West Shore shares and bonds which it took in payment for the work, as well as on the cost of construction.

Regular trains on this road began to run through to Buffalo on Jan. 1, as heretofore announced. The opening of the road was without special formalities, although the first through trains carried a number of invited guests, and were generally welcomed at points on the line.

Norfolk & Western.—This company makes the following statement for November and the eleven months ending Nov. 30:

	November.		Eleven months.	
	1883.	1882.	1883.	1882.
Earnings	$271,279	$261,235	$2,580,024	$2,204,982
Expenses	142,555	132,875	1,362,808	1,199,001
Net earnings	$128,724	$128,360	$1,217,216	$1,005,981
Per cent. of exps.	52	51	53	54

For the eleven months there was an increase of $375,042, or 17 per cent., in gross earnings, with an increase of $163,807, or 14 per cent., in expenses, the result being a gain in net earnings of $211,235, or 21 per cent. The New River Division (75 miles) was opened for business May 21, 1883, and its earnings and expenses are included from that date.

Oregon Improvement Co.—This company makes the following statement for November and the fiscal year ending Nov. 30:

	November.		Year.	
	1883.	1882.	1883.	1882.
Earnings	$384,247	$340,058	$4,089,356	$3,361,277
Expenses	231,509	249,504	2,742,494	2,265,613
Net earnings	$152,738	$90,554	$1,346,862	$1,095,664
Per cent. of exps.	60.3	73.4	67.1	67.4

For the year the increase in gross receipts was $728,079, or 21.7 per cent., and the increase in expenses $476,881, or 21.0 per cent., leaving a gain in net receipts of $251,198, or 22.9 per cent.

Oregon & Transcontinental Co.—On Dec. 31 the special committee, consisting of Messrs. E. P. Fabbri, Wm. Endicott, Jr., and R. G. Rolston, appointed to examine the condition of this company, submitted the following report:

"The committee appointed by the Executive Committee of the Oregon & Transcontinental Co. to examine the assets and liabilities of the company and report thereon would respectfully represent to your committee that, in response to a suggestion in which they heartily concurred, Mr. R. G. Rolston was by them requested to join the committee and take part in the investigation. The committee was organized by the appointment of Mr. E. P. Fabbri as Chairman and Secretary, and at the earliest moment proceeded to an investigation of the company's affairs. The matter of the investigation being of an intricate character, and requiring many meetings, much time has necessarily been taken by the committee in arriving at the substance of their report. Inasmuch as the business and affairs of the company had been largely under the control and management of President Villard his absence in consequence of severe illness during the examination has greatly interfered with the committee's labors and has prevented them making a report as satisfactory in detail as they would have desired. The committee would report:

"That the assets of the company, as shown by the books and from the certificates of parties holding securities as collaterals on loans, as well as the actual count of such securities as are in the possession of the company, are as follows:

Oregon Ry. & Nav. Co., 152,027 shares	$15,202,700
Northern Pacific preferred, 158,700 shares	5,870,000
" " common, 147,934 "	14,793,400
Wisconsin Central, 18,714 shares	1,871,400
Milwaukee & Lake Winnebago preferred, 2,775 shares	277,500
" " " common, 2,260 "	226,000
Oregon & California preferred, 150 shares	15,000
" " " common, 400 "	40,000
Oregon Iron & Steel Co., 1,500 shares	150,000
Total stocks, at par	$48,446,000
Oregon & California second-mortgage bonds	2,000,000
Lands earned and other real estate	286,364
Oregon Improvement Co	514,128
Puget R. R., under construction and not bonded	421,022
Northern Pacific Co., balance of account	1,240,206
Cash	195,928
Total nominal value, putting securities at par	$53,103,648

"And the liabilities of the company from the best sources at the committee's hands are shown to be as follows:

Bills payable	$10,562,500
Credited vouchers, as reported by Treasurer	396,733
Due Oregon Ry. & Nav. Co	48,896
Total	$11,008,129

"The committee are informed that the bonds yet to be received from branch lines will meet the requirements for construction. Your committee has deemed it proper to state the assets at their face or share value, not considering it within their province or desirable to affix market values which are constantly liable to fluctuation.

"In closing the report the committee desire to express their appreciation of the readiness on the part of the officers and employés of the company to facilitate as much as lay in their power the task assigned to the committee."

With the exception of the Oregon Railway & Navigation Co. and the Northern Pacific, the stocks given in the list can hardly be said to have any market value except the Wisconsin Central, which is quoted in Boston at about 14 to 15. Allowing them a small valuation, however, and taking the others at current quotations, the value of the stocks would be about $25,685,000, making the total assets $30,432,648, or $19,424,519 in excess of the liabilities as reported.

Philadelphia & Reading.—Ex-Attorney-General Charles J. M. Gwinn, as counsel for the Philadelphia & Reading Railroad Co., appeared before the Board of Public Works at Annapolis, Md., Dec. 18, in reference to the adjustment of the mortgage debt on account of the Susquehanna & Tidewater Canal. The company has possession of this canal under a lease in which the company stipulates to pay the state an annual interest of $60,000 on the mortgage of $1,000,000. The mortgage continues among the unproductive assets of the state, the unpaid interest amounting to $354,000. The act of 1880, chapter 440, authorized the Treasurer of the state to accept the debenture guaranteed scrip, with interest coupons attached, for arrears of interest to July 1, 1879, which, however, was not paid.

After an interchange of views it was agreed that Mr. Gwinn, after a correspondence with President Gowen, should submit a definite proposition for settlement to the Board of Public Works of Maryland. This was done by Mr. Gwinn and after an informal discussion the Board submitted other proposals for the consideration of the Reading managers. The terms offered by either party have not been made public.

It is understood that the Reading Railroad Co. is preparing to foreclose the mortgage on the Union Canal extending from Middletown, Pa., to Reading. The mortgage is for $3,000,000 and fell due Nov. 1 last. The Reading holds about $1,897,000 of the bonds, which it bought some years ago at 19 for the sake of controlling a navigation line between the Schuylkill and the Susquehanna canals.

Pittsburgh & Western.—A dispatch from Pittsburgh, Pa., Dec. 27, said: "The negotiations looking to the lease of the Pittsburgh & Western Railroad to the Jewett interest are stated positively by a stockholder of the former to have fallen through. He also states that if the Pittsburgh & Western road is leased at all the Baltimore & Ohio Co. will be the lessee."

Just at present the company seems to be more anxious to dispose of its road than any one else is to buy or lease it.

Pottsville & New York.—This company has been organized to build a railroad from Pottsville, Pa., to New Boston, the terminus of a branch of the Lehigh Valley road. The distance is 12 miles, and some heavy grades will be required. The object is to secure an outlet for Pottsville independent of the Reading road.

San Francisco & North Pacific.—This company has for some time been pushing work on the San Francisco & San Rafael road, an extension of its line from San Rafael, Cal., to Tiburon on Racoon Straits, 6 miles from the wharves and ferry landings in San Francisco. Extensive terminal facilities are under construction at Tiburon, including docks, ferry-slips, warehouses, etc. This extension, it is expected, will be ready for traffic about May 1 next. The total length is 9½ miles, on which 2½ miles of track have been laid. This extension requires some heavy work, including three tunnels, the length of which is 3,536 ft. in all.

St. Louis & San Francisco.—The following circular from the General Passenger Department is dated St. Louis, Jan. 1: "I take pleasure in announcing that this company has completed and opened for business its own independent line between St. Louis Union Depot and Pacific, Mo. (34 miles), with stations in the order, viz.: St. Louis Union Depot, Grand Avenue, Chouteau Avenue, Tower Grove, Howards, Cheltenham, Gratiot, Old Orchard, South Webster, Oakland, South Kirkwood, Meramec, Ranken, South Side, Crescent, Eureka, Allenton and Pacific. For many years past the trains of this company have been operated over the track of the Missouri Pacific Railway Co. between St. Louis and Pacific, under the control of that company; said arrangement has now ceased, and with our extensive terminal facilities at St. Louis, and having full control of our own business, I am happy to announce for our passenger patronage both increased and improved service."

St. Louis & San Francisco.—The new extension from Pacific, Mo., to St. Louis, 34 miles, was opened for business Jan. 1, when the company's trains began to run through to St. Louis on its own tracks for the first time.

The following is given as an estimated statement of the operations of this company for 1883:

Gross earnings	$3,903,591
Expenses	1,776,135
Net earnings	$2,127,456
Fixed charges	1,349,300
Surplus	$778,156

The 7 per cent. dividends on the first-preferred stock outstanding (deducting that held by the company) require $300,006, leaving a balance of $478,150, which is equal to about 4¾ per cent. on the second-preferred stock.

Tennessee Railroad Commission.—At Columbus, O., recently, upon an application of two Tennessee railroad companies, the East Tennessee, Virginia & Georgia and the Louisville & Nashville, Judge Baxter, in the United States Court, granted a restraining order against the Tennessee Railroad Commissioners, to prevent interference by them with freight rates, etc., until the application for an injunction is heard and determined. The argument on this application will be heard in Nashville, Jan. 11 and 12, before Judges Baxter, Key and Hammond.

Texas & Pacific.—The bridge over the Atchafalaya River, so long under construction, has at last been completed, and the New Orleans Division of the road has now an unbroken track from Shreveport, La., to the west bank of the Mississippi opposite New Orleans. Heretofore a ferry transfer at the Atchafalaya has been necessary, causing considerable delay to traffic. The work of building the bridge has been one of much difficulty, owing to the nature of the foundations and the constant interruptions caused by high water in the river. The bridge is thus described by the New Orleans *Times-Democrat* of Dec. 28:

"The history of this bridge is of interest. Actual work on the foundations was commenced in September, 1881, but owing to the unprecedented high water, which reached a point 4 ft. above previous high-water marks, the work had to be suspended in December, 1881, and nothing could be done until July, 1882. When work was resumed it was found that great changes had taken place and were going on in the bed of the stream; the river was growing wider and deeper, and it was decided by the engineers that they must go to a greater depth than had been contemplated, in order to secure a foundation free from the danger of scouring. Before the plant necessary for use in going to the great depth decided upon could be provided the high water of 1882–83 came down, and no actual work could be done until June, 1883. Work was then resumed, and a double force, day and night, have been constantly employed until the completion of the bridge.

"This splendid structure is 1,045 ft. long and consists of two fixed spans of 253 ft. each, one of 163 ft., a draw span of 303 ft. and 73 ft. of trestle approaches. The spans are of iron and of the well-known Pratt pattern. The piers are of wrought iron based upon cast iron cylinders, which are filled with concrete. The foundations are in no case less than 120 ft. below high water, and are from 70 to 115 ft. in the ground. Great difficulties were experienced in sinking the immense cylinders on account of the great depth and the vast number of logs encountered in the bed of the river, but more particularly on account of the dreadful malaria of the surrounding swamps, which greatly decimated the force employed, one-half of the men being frequently prostrated at one time.

"However, under all these difficulties the bridge is happily completed, and reflects great credit upon the energetic engineers who were in charge, Capt. J. F. Anderson, Engineer and Superintendent, and Major C. C. Barr, Consulting Engineer. The cost of this important bridge, that binds the metropolis of the South to her sister cities of the ever-growing West, is about $500,000, but its value to the Texas & Pacific Railway, as well as to its eastern and western connections, cannot be estimated, and to our New Orleans merchants and their multiplying customers in the interior, the benefit will be incalculable."

Texas & St. Louis.—The St. Louis *Republican* says: "The stock and bond readjustment scheme of the Texas & St. Louis seems fairly bound to carry. Of the bondholders representing $600,000 in bonds, who recently met at New York, and were at first somewhat opposed to the plan, quite a large proportion have signed the readjustment agreement. One St. Louis party, owning $10,000 in bonds, is still holding out, but, with these exceptions, the project has been assented to by the greater proportion of the different classes of bondholders. It is not necessary to the success of the plan that these other parties should come in, as the great majority of security-holders have already signed the agreement; but if the present outstanding bonds are brought into the scheme the cost of technical foreclosure proceedings is rendered unnecessary, as even a friendly foreclosure involves considerable expense."

Toledo Cincinnati & St. Louis.—The new bondholders' committee has completed its organization. The committee consists of John Felt Osgood, chairman; Samuel Atherton, Boston; George C. Moses, Bath, Me.; C. W. Pierce, Boston; R. B. Fuller, Boston; H. Sayles, Boston; W. D. Hobbs, Boston; John McNabb, Gloversville, N. Y; J. M. Quigley, New York; George Hafer, Cincinnati; D. M. Sweetzer, Lynn, Mass.; J. Kimball, Concord, N. H.; G. W. Ballou, New York; L. Caton, Gloversville, N. Y.; Willard White, Boston; H. D. Hyde, Boston; J. M. Kimball, Lowell; W. B. Mansfield, Boston. The following-named executive committee were appointed: John Felt Osgood, chairman; Samuel Atherton, C. W. Pierce, Willard White, J. M. Quigley, John McNabb, R. B. Fuller. The committee will have headquarters and open a transfer office. The chairman will receive compensation for his services.

Union Pacific.—A correspondent of the Boston *Traveller* writes from Baker City, Or., of the Oregon Short Line as follows: "The Short Line leaves the main line of the Union Pacific road at Granger, in Southeastern Wyoming, 876 miles from Omaha, and 156 miles east of Ogden. The road runs a little north of west out of Wyoming, across the entire territory of Idaho, and, as at present surveyed, into Eastern Oregon as far as Huntington, a point 52 miles east of this city. After leaving Granger, going west, the road follows Ham's Fork for 40 miles, then Twin Creek 18 miles, and then enters the Great Bear River Valley, 90 miles in extent, passes through that and follows the Pont Neuf for forty miles, and 26 miles west of Pocatello it makes its first crossing of Snake River and enters the great lava beds of Idaho. The total length of the road as at present surveyed, including branches and sidings, is 631.7 miles. The first rail was laid by W. L. Ryder, an old and valued employé of the Union Pacific Co., on July 11, 1881. In that year 64 miles of road was completed; 289 miles in 1882, and almost 200 miles have been built this year and the grading is finished to Huntington. The road crosses the Snake four times—at American Falls, Riverside, Fayette, and at the mouth of Burnt River into Oregon. The lumber for building the bridges at the last named three points, they being within 75 miles of each other, is upon the grounds, and the work upon them has already commenced. The track is laid to within 82 miles of Huntington, and regular trains are now run to Caldwell, 30 miles west of Boise. The first regular freight train commenced running in December, 1882, and the first passenger train July 1, 1883."

The track is now reported laid to Ontario, Oregon, 34 miles beyond Caldwell, and 497 miles from Granger, leaving about 48 miles to be completed to reach Huntington.

A branch has recently been completed from the Albion branch at Genoa, Neb., westward to Fullerton, about 15 miles. This branch is to be further extended to Cedar Rapids, twenty miles.

Work is progressing well on the extension of the Lincoln Branch from Lincoln, Neb., southward to Beatrice, and it will be finished early in the spring.

Washington, Cincinnati & St. Louis.—The sale of this road to a syndicate composed of A. H. Martin, of New York; H. D. Cooke, of Washington; U. L. Boyce, Vice-President of the Shenandoah Valley Railroad, and others, was completed at Harrisonburg, Va., last week. The road is to run from the Shenandoah Valley Railroad in Rockingham County, Va., *via* Harrisonburg, to the West Virginia line; thence through Pocahontas and Webster counties in West Virginia.

West Jersey.—This company makes the following statement for November, and the eleven months ending Nov. 30:

	November.		Eleven months.	
	1883.	1882.	1883.	1882.
Earning	$81,033	$78,090	$1,152,188	$1,046,183
Expenses	48,503	63,468	696,636	602,254
Net earnings	$32,530	$14,622	$455,552	$443,929
Pr. ct. of exps.	59.9	81.4	60 5	57.6

This shows for the eleven months an increase of $106,005, or 10.1 per cent., in gross earnings, with an increase of $94,882, or 15.7 per cent., in expenses, the result being a gain in net earnings of $11,623, or 2.6 per cent.